

**Environmental Standards and Procedures for  
United States Army Kwajalein Atoll (USAKA)  
Activities in the Republic of the Marshall Islands**

**Eighth Edition**

**April 2003**





**ENVIRONMENTAL STANDARDS AND PROCEDURES  
FOR  
UNITED STATES ARMY KWAJALEIN ATOLL (USAKA)  
ACTIVITIES IN THE  
REPUBLIC OF THE MARSHALL ISLANDS**

**EIGHTH EDITION**

**APRIL 2003**

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## ACKNOWLEDGMENTS

The following people participated in the development of the USAKA Environmental Standards and Procedures as members of the USAKA Environmental Standards Project Team. The Project Team was co-chaired by the U.S. Army Space and Strategic Defense Command and the U.S. Environmental Protection Agency, Region IX.

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## **ADOPTION**



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The Environmental Standards and Procedures for United States Army Kwajalein Atoll Activities in the Republic of the Marshall Islands are approved as amended April 2003, and take effect upon signature:

**FOR THE UNITED STATES OF AMERICA**



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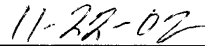


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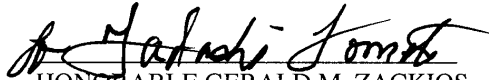


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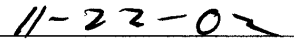


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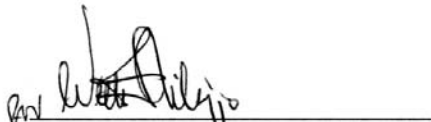
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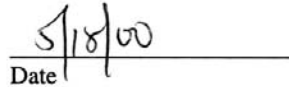
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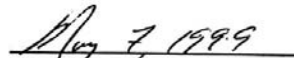
  
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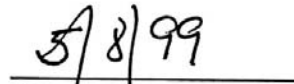
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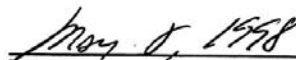
  
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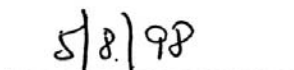
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Republic of the Marshall Islands

  
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FOR THE UNITED STATES OF AMERICA



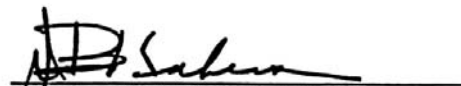
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EFFECTIVE DATE


These procedures shall take effect upon signature and upon completion of the consultation process with the Republic of the Marshall Islands.

FOR THE U.S. ARMY KWAJALEIN ATOLL

  
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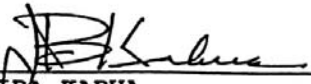
  
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CERTIFICATION OF CONSULTATION

CONSULTATION WITH THE REPUBLIC OF THE MARSHALL ISLANDS HAS BEEN  
COMPLETED, AND NO ADDITIONAL COMMENTS ARE NOTED

FOR THE REPUBLIC OF THE MARSHALL ISLANDS

  
\_\_\_\_\_  
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Republic of the Marshall Islands

4 Dec 1995  
Date

## SUMMARY OF REVISIONS

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## **PART 1 EXECUTIVE SUMMARY**

### **1-1 INTRODUCTION**

This executive summary presents an overview of the development and organizational structure of the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands* (Standards). The standards and procedures in the Standards apply to all activities of the United States Government that occur on the USAKA-controlled islands and the Mid-Atoll Corridor, as well as all USAKA-controlled activities within the Republic of the Marshall Islands (RMI), including the territorial waters of the RMI. Throughout this document, references to USAKA include the Ronald Reagan Ballistic Missile Defense Test Site, which is under the command of USAKA. The legislative background, the approach to the development of the Standards, the organization and origin, a summary of the Standards, and the formal adoption process are discussed briefly.

### **1-2 BACKGROUND**

#### **1-2.1 LEGISLATIVE**

The *Compact of Free Association Between the United States of America and the Republic of the Marshall Islands*, 48 U.S.C. 1681 (Compact), which became effective on October 21, 1986, under Presidential Proclamation No. 5564, November 3, 1986, establishes the framework for administering governmental, economic, security, and defense relations between the RMI, which formerly was a part of the Trust Territory of the Pacific Islands (TTPI) and is now a sovereign nation, and the United States Government (U.S. Government).

Title One, Article VI, of the Compact obligates the U.S. Government to develop environmental standards and procedures and to apply them to its activities in the RMI. Specifically, (1) environmental controls in effect before the effective date of the Compact (U.S. environmental laws that applied to the TTPI) shall be applied to the continuing activities of the U.S. Government until those controls are modified under the authority of the Compact; (2) the National Environmental Policy Act of 1969 (NEPA) shall be applied to all U.S. Government activities within the RMI as if the RMI were part of the United States; (3) for all U.S. Government activities requiring the preparation of an environmental impact statement (EIS) under NEPA, the U.S. Government shall comply with environmental standards that protect public health and safety and the environment that are comparable to the following U.S. statutes: Toxic Substances Control Act (TSCA); Resource Conservation and Recovery Act (RCRA); Marine Protection, Research, and Sanctuaries Act (MPRSA, Title I, which includes and is referred to as the "Ocean Dumping Act" (ODA)); Clean Water Act (CWA); Clean Air Act (CAA); and Endangered Species Act (ESA); and to other environmental statutes as agreed upon by the U.S. Government and the RMI; and (4) judicially reviewable standards and procedures shall be developed to regulate all U.S. Government activities at USAKA requiring the preparation of an EIS.

In the development of the standards and procedures, the particular environments of the RMI and the historical and current relationship between the U.S. Government and the RMI were considered. The RMI was consulted in developing the standards and procedures to ensure that regulatory requirements are consistent with the needs of the RMI and the environment. The Compact also provides that the RMI and the U.S. Government may agree to modify or supersede any environmental standard or procedure developed and applied under the authority of the Compact, and the Standards shall be reviewed periodically and revised as appropriate.

## **1-2.2 USAKA ENVIRONMENTAL IMPACT STATEMENT**

In 1989, the U.S. Army completed an EIS under NEPA (*Final Environmental Impact Statement, Proposed Actions at U.S. Army Kwajalein Atoll*, USASSDC, October 1989 for continuing and planned activities at USAKA. The environmental statutes considered in the EIS were derived in a three-step process. First, U.S. statutes and regulations that applied to USAKA when the RMI was part of the Trust Territory of the Pacific Islands were reviewed to determine which were to be considered for continuing activities. Second, the Compact was reviewed to determine which statutes were relevant for new activities after the trusteeship ended for the RMI. Third, a wider range of environmental controls and statutes were reviewed to ensure the protection of public health and safety and the environment at USAKA. The U.S. Army applied the controls of the six U.S. statutes specified in Section 161(a)(3) of the Compact. Because the EIS showed that new activities planned for USAKA expanded the scope of ongoing activities, as a matter of policy, the U.S. Army considered seven additional environmental statutes determined to be relevant to planned USAKA activities. The 13 statutes are listed in Table 1-2.2. The 13 statutes were used to evaluate the potential effects of the proposed activities and ensure the protection of, public health and safety and the environment at USAKA. Among other things, the 1989 EIS and the subsequent record of decision (ROD) identified and amplified the need for the U.S. Government to develop the environmental standards and procedures required under the Compact.

<b>Table 1-2.2</b> <b>U.S. ENVIRONMENTAL STATUTES APPLIED TO THE 1989 EIS</b>	
7 U.S.C. 136	Federal Insecticide, Fungicide, and Rodenticide Act
15 U.S.C. 2601	Toxic Substances Control Act
16 U.S.C. 470	National Historic Preservation Act
16 U.S.C. 469	Archaeological and Historic Preservation Act
16 U.S.C. 1531	Endangered Species Act of 1973
33 U.S.C. 1251	Clean Water Act
33 U.S.C. 1401-1445	Ocean Dumping Act
42 U.S.C. 300f-300j	Safe Drinking Water Act
42 U.S.C. 4901-4918	Noise Control Act
42 U.S.C. 6901-6992k	Resource Conservation and Recovery Act/Solid Waste Disposal Act
42 U.S.C. 7401	Clean Air Act
42 U.S.C. 9601-9675	Comprehensive Environmental Response, Compensation, and Liability Act
42 U.S.C. 1801	Hazardous Material Transportation Act

### 1-2.3 PROJECT TEAM

The U.S. Army Space and Missile Defense Commands (SMDC) (formally Space and Strategic Defense Command) was charged with organizing an effort to develop the required standards and procedures for activities at USAKA\*. A project team was formed to prepare a draft of the Standards for formal approval by the U.S. Government and the RMI. The project team was co-chaired by SMDC and the U.S. Environmental Protection Agency (USEPA), Region IX. The project team consists of representatives from the following agencies:

U.S. Army Space and Missile Defense Command (SMDC) (Co-Chair)

U.S. Environmental Protection Agency (USEPA), Region IX (Co-Chair)

U.S. Fish and Wildlife Service (USFWS)

U.S. Army Engineer Division, Pacific Ocean (USAEDPO)

U.S. Army Kwajalein Atoll (USAKA)

U.S. National Marine Fisheries Service (USNMFS)

Republic of the Marshall Islands, Environmental Protection Authority (RMIEPA)

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\* An effort to develop the required procedures and standards had been initiated by Region IX of the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers at the request of the Department of State. Because of resource constraints, however, progress was limited.



## Technical Advisors

Army Center for Health Promotion and Preventive Medicine (CHPPM) [formerly the U. S. Army Environmental Hygiene Agency (USAEHA)]

### **1-3 APPROACH**

The project team took a comprehensive approach in developing the environmental standards and procedures for USAKA, and the team endeavored to prepare an integrated set of standards and procedures that would incorporate the substantive requirements of U.S. and RMI environmental statutes and regulations that are necessary for protecting public health and safety and the environment. In certain areas, standards were developed to provide additional protection for the fragile and limited environmental resources of the RMI. In other areas, standards were developed to provide protection that is appropriate for the particular environment of USAKA. Finally, procedures were developed to ensure full review of activities potentially affecting the environment at USAKA while simplifying many of the administrative provisions of existing U.S. statutes and regulations.

In reviewing U.S. and RMI statutes and regulations for appropriate environmental controls, the project team identified applicable substantive and procedural requirements for developing the Standards. Provisions that are currently inapplicable, such as the Noise Control Act, were identified and were retained for future consideration, and procedural commonalities were combined to eliminate redundancy. The review resulted in the formation of a common section specifying the procedural and administrative framework for implementing the Standards (Part 2), and seven major resource categories were combined in a single technical section (Part 3) of the Standards. The project team agreed that health-based standards at USAKA would be at least as stringent as comparable U.S. statutes and regulations. Other U.S. regulatory requirements, such as technology-based standards, could be modified or eliminated if their underlying purpose of achieving an environmental objective was otherwise achieved in the Standards. The reviews and decisions established the basis for drafting the standards and procedures for USAKA.

In developing the Standards, the project team focused on the 13 statutes (Table 1-2.2) used as the basis for analysis for the 1989 EIS and considered appropriate statutes and regulations of the RMI. All of those statutes except the Noise Control Act\* were adopted by the team. The team added the Fish and Wildlife Coordination Act (FWCA), the Migratory Bird Conservation Act (MBCA), and the Marine Mammal Protection Act (MMPA). The addition of these three acts and the elimination of the Noise Control Act resulted in a total of 15 statutes being embodied in the Standards.

The U.S. and RMI environmental statutes and relevant international agreements consulted during this process are listed in Table 1-3.

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\* The project team did not include the Noise Control Act because the regulatory controls of that statute focus on manufacturing sources, which do not apply at USAKA. The Standards incorporate the noise monitoring provisions of Chapter 7 of the Army Regulation 200-1.

**TABLE 1-3**  
**STATUTES AND AGREEMENTS CONSULTED DURING**  
**DEVELOPMENT OF USAKA STANDARDS**

**United States Government Statutes**

Archaeological and Historic Preservation Act (AHPA), 16 U.S.C. 469  
 Clean Air Act (CAA), 42 U.S.C. 7401 *et seq.*  
 Clean Water Act (CWA), 33 U.S.C. 1251 *et seq.*  
 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601 *et seq.*  
 Endangered Species Act (ESA), 16 U.S.C. 1531 *et seq.*  
 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136 *et seq.*  
 Fish and Wildlife Coordination Act (FWCA), 16 U.S.C. 661 *et seq.*  
 Hazardous Materials Transportation Act (HMTA), 49 U.S.C. 1801 *et seq.*  
 Marine Mammal Protection Act (MMPA), 16 U.S.C. 1361 *et seq.*  
 Marine Protection, Research, and Sanctuaries Act (MPRSA), Title I of which is the Ocean Dumping Act (ODA), 33 U.S.C. 1401 *et seq.*  
 Migratory Bird Conservation Act (MBCA), 16 U.S.C. 715  
 National Historic Preservation Act (NHPA), 16 U.S.C. 470  
 Noise Control Act, 42 U.S.C. 4901 *et seq.*  
 Resource Conservation and Recovery Act (RCRA) and Solid Waste Disposal Act (SWDA), 42 U.S.C. 6901 *et seq.*  
 Safe Drinking Water Act (SDWA), 42 U.S.C. 300f-300j  
 Toxic Substances Control Act (TSCA), 15 U.S.C. 2601 *et seq.*

**Republic of Marshall Islands Statutes and Regulations**

Coast Conservation Act 1988, 35 Marshall Islands Revised Code (MIRC), Chapter 4  
 RMIEPA Environmental Impact Assessment Regulations 1994  
 RMIEPA Regulations for the Sustainable Development of the Coastal Zone  
 Endangered Species Act 1975, 8 MIRC, Chapter 5  
 Historic Preservation Act 1991, 45 MIRC, Chapter 2  
 Littering Act 1982, 35 MIRC, Chapter 2  
 Marine Mammal Protection Act 1990, 33 MIRC, Chapter 5  
 Marine Resources Act, 33 MIRC, Chapter 1  
 Marine Resources (Trochus) Act 1983, 33 MIRC, Chapter 3  
 Marine Zones (Declaration) Act 1984, 33 MIRC, Chapter 2  
 Marshall Islands Marine Resources Authority Act 1988, 33 MIRC, Chapter 4

**Republic of Marshall Islands Statutes and Regulations (continued)**

National Environmental Protection Act 1984, 35 MIRC, Chapter 1  
 RMIEPA Clean Air Regulations (Draft)  
 RMIEPA Earthmoving Regulations 1989 (Incorporating 1994 Amendments)  
 RMIEPA Marine Water Quality Regulations 1992  
 RMIEPA Marshall Islands Pollutant Discharge Elimination System (MIPDES) Regulations  
 RMIEPA Pesticides Regulations (Draft)  
 RMIEPA Public Water Supply Regulations 1994  
 RMIEPA Solid Waste Regulations 1989  
 RMIEPA Toilet Facilities and Sewage Disposal Regulations 1990  
 Public Health, Safety, and Welfare Act, 7 MIRC, Chapter 1.  
 Public Lands and Resources Act, 9 MIRC, Chapter 1.

**International Agreements**

Compact of Free Association Between the United States of America and the Republic of the Marshall Islands (Compact)  
 Convention for the Protection of the Natural Resources and Environment of the South Pacific and Related Protocols (MARPOL, 73/78)  
 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, 1990  
 Convention on International Trade in Endangered Species (CITES)  
 Convention on the Continental Shelf, 1958  
 Convention on the Law of the Sea, 1982  
 Convention on the Territorial Sea and Contiguous Zone, 1958  
 London Dumping Convention

**1-4 ORGANIZATION AND ORIGIN**

The Standards are organized into one procedures section (Part 2) and one technical standards section (Part 3) containing seven environmental categories. The major areas covered in the procedures section include: agency representatives and project team; reporting and notification; monitoring; employee training; record retention; auditing; compliance assurance; oversight; conflict resolution; review of standards; and exemptions. The environmental categories are air quality, water quality and reef protection, drinking water quality, endangered species and wildlife resources, ocean disposal, material and waste management, and cultural resources.

The organization of the Standards and the U.S. statutes from which they are primarily derived are shown in Table 1-4. RMI statutes and regulations and the international agreements listed in Table 1-4 also were consulted to consider appropriate provisions.

<b>TABLE 1-4</b> <b>ORGANIZATION AND ORIGIN OF THE STANDARDS</b>	
<b>STANDARDS</b>	<b>U.S. STATUTE FROM WHICH PRIMARILY DERIVED</b>
Part 1 Executive Summary	All Statutes Listed
Part 2 Procedures	All Statutes Listed
Part 3 Standards	
3-1 Air Quality	Clean Air Act
3-2 Water Quality and Reef Protection	Clean Water Act
3-3 Drinking Water Quality	Safe Drinking Water Act
3-4 Endangered Species and Wildlife Resources	Endangered Species Act Fish and Wildlife Coordination Act Marine Mammal Protection Act Migratory Bird Conservation Act
3-5 Ocean Disposal	Marine, Protection, Research, and Sanctuaries Act, which includes the Ocean Dumping Act Clean Water Act
3-6 Material and Waste Management	Resource Conservation and Recovery Act and Solid Waste Disposal Act Toxic Substances Control Act Federal Insecticide, Fungicide, and Rodenticide Act Comprehensive Environmental Response, Compensation, and Liability Act Hazardous Material Transportation Act
3-7 Cultural Resources	National Historic Preservation Act Archaeological and Historic Preservation Act

## 1-5 SUMMARY OF STANDARDS

To conform to Section 161 of the Compact, all standards, whether modified or adopted unchanged, were developed with the intent of protecting public health and safety and the environment. The project team interpreted that language to mean that the standards developed for USAKA would provide environmental protection that is equivalent to the public health and safety and environmental protection provided by the applicable U.S. statutes and regulations, taking into consideration the particular environment of USAKA and the special relationship between the RMI and the United States. Applicable RMI statutes and regulations and international conventions also were considered.

## **1-5.1 INTRODUCTION**

Generally, U.S. statutes and regulations that address grant programs, implementation by state or local governments, enforcement procedures, or other areas not applicable to USAKA (such as provisions for Indian tribes) were not considered. Specific requirements of U.S. statutes and regulations that provide basic public health and safety considerations have been incorporated into the Standards. Many protocols for testing, analysis, and sampling also have been included through incorporation by reference. Where U.S. regulations allow exceptions to specific requirements, a process for obtaining the exception has been incorporated into the substantive sections of the Standards in certain cases. Other substantive provisions of U.S. statutes and regulations have been adapted to reflect the particular environment of USAKA. Finally, a set of procedural requirements was developed to streamline the administrative and compliance assurance process and recognize the relationship between the RMI and U.S.

A summary of the Standards is presented in Sections 1-5.2 through 1-5.9 and is organized on the basis of the procedures and the environmental categories. The sections on the procedures and the environmental categories include a discussion of the U.S. statutes and regulations from which the Standards are derived, a description of the environmental conditions at USAKA, and a summary of the principal differences between the Standards and the applicable U.S. statutes and regulations.

## **1-5.2 PROCEDURES**

The procedures in Part 2 were drafted to ensure that activities potentially affecting the environment at USAKA are fully disclosed to all Appropriate Agencies\* (Section 2-6.1) and that each appropriate agency has an opportunity to review and comment on activities potentially affecting the environment. The procedures replace a wide variety of requirements in more than a dozen U.S. environmental regulations, as referenced in Table 1-4, and emphasize the participation of the Appropriate Agencies and the public in reviewing environmental information.

The procedural standards accommodate two factors. The first is the fragile environmental condition of the islands and the surrounding marine environment. The second is the relationship between the U.S. and RMI governments as specified in the Compact.

Rather than establishing separate procedural standards for each of the seven environmental categories the Standards establish a consolidated and comprehensive approach to compliance. The procedures streamline the management structure for the environmental categories to protect the USAKA environment while giving the Appropriate Agencies an opportunity to review and influence activities potentially affecting the environment. In addition, the interaction among the

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\* “Appropriate Agencies” are the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the U.S. National Marine Fisheries Service, the U.S. Army Corps of Engineers and the RMI Environmental Protection Authority.

U.S. Government and the RMI Government is defined, and an administrative process for conflict resolution has been designed to ensure that disputes are resolved in a fair manner. The procedures are similar to U.S. statutes and regulations in that they require USAKA to produce reports on existing or potential environmental conditions. USAKA also must develop and maintain studies and plans that are subject to periodic review to ensure accuracy and completeness. Procedural mechanisms to document and obtain agreement on activities before they are initiated and resolve non-compliance are included.

USAKA is required to conduct periodic internal audits of the facilities and programs that have the potential to affect public health and safety or the environment. The audits are intended to ensure compliance with environmental standards by instituting self-inspection programs. Reports on the status of compliance must reveal all identified problems and present recommendations and schedules for corrective action to U.S. and RMI agencies. In addition to the internal audits, USAKA must be audited by an independent agency every four years. The Appropriate Agencies are allowed to conduct compliance inspections at any time, subject to mission and security considerations.

A “Document of Environmental Protection” (DEP) is a procedural mechanism that provides a forum for the Appropriate Agencies and the public to review and comment on the activities proposed by USAKA that have the potential to affect the USAKA environment. USAKA is responsible for seeking agency agreement on the proposed activity and completing a DEP that includes all the comments and recommendations of the Appropriate Agencies raised during the review process. The activities requiring a DEP are listed in Section 2-17.3.1. Before submitting a DEP, USAKA must furnish to the Appropriate Agencies sufficient information on the potential effects of the project on the environment in the form of a Notice of Proposed Activity (NPA) or a Notice of Continuing Activity (NCA). If the Appropriate Agencies find that the submittal is incomplete, USAKA may respond to the findings by furnishing additional data to the requesting agencies, clarifying the content of the furnished information, or notifying the Appropriate Agencies of its disagreement with their findings. The Appropriate Agencies may respond to USAKA's assessment of the effects of a proposed activity by submitting Environmental Comments and Recommendations (ECR), which include recommendations for mitigating the environmental effects of an activity.

The DEP must include, at a minimum, documentation of the review process, descriptions of the proposed activity and the associated potential environmental effects of the activity, and applicable procedures for monitoring, notification, and reporting. Appropriate Agencies sign the DEP to indicate agreement with the proposed activity and associated mitigation and reporting measures. If disputes arise concerning USAKA compliance with the Standards, any Appropriate Agency or USAKA may initiate the formal process for conflict resolution that is defined in Section 2-19.

Conflict resolution (Section 2-19) is a procedural mechanism for expediting resolution of disputes among the Appropriate Agencies (Section 2-6) and USAKA about compliance with an environmental standard. The intent of establishing procedures specific to disputes that may arise is to give all agencies a way of resolving disputes before they escalate and impede implementation of environmental standards at USAKA. Conflict resolution procedures establish

a formal approach to resolving disputes so that disagreements among parties are addressed at the point of origin or the lowest administrative level possible. If disputes cannot be resolved using the conflict resolution procedures, the RMI Government retains the right, as specified in Section 162 of the Compact, to seek judicial review of USAKA's actions.

### **1-5.3 AIR QUALITY**

The standards for air quality (Section 3-1) are derived from applicable sections of 40 CFR 50 through 87, which establish air quality regulations according to the CAA.

Because of the relatively small numbers and types of air-pollution sources, the dispersion caused by trade winds, and the lack of topographic features that inhibit dispersion, air quality at USAKA is considered good (i.e., well below the maximum levels established for air quality in the United States). The primary activities at USAKA contributing to air pollution are generation of power, incineration of solid waste, storage and handling of fuel, transportation, and rocket launches. The majority of sources are combustion sources that produce particulates, nitrous oxide, sulfur dioxide, carbon monoxide, and hydrocarbon emissions.

The air quality standards and procedures accomplish the fundamental purposes of the Clean Air Act (CAA) but do not necessarily incorporate many of the procedural or mandatory technology-based requirements established under the CAA. The air quality standards are designed to maintain the current air quality at USAKA. Ambient air concentrations for criteria pollutants are not allowed to be increased above the level predicted to exist on the effective date of these Standards by more than an increment of 25% of the U.S. Ambient Air Quality Standard for the criteria pollutant. In no case shall ambient air quality concentrations for a criteria pollutant be allowed to exceed 80 percent of any U.S. Ambient Air Quality Standard. In general, the Standards gauge effectiveness and acceptance in terms of ambient air quality effects rather than through application of technology-based controls. All significant stationary sources of criteria pollutants, hazardous air pollutants and activities covered by a U.S. National Emission Standard for Hazardous Air Pollutants (NESHAPS) must be governed by a Document of Environmental Protection (DEP), which is subject to review by U.S. and RMI agencies as well as public review. NESHAPS categories that are applicable or potentially applicable at USAKA are presented in appendices 3-1C and 3-1D, and all current NESHAPS are adopted by reference. General provisions are included for maintaining inventories of emission sources, reporting, eliminating or reducing the use of chemicals associated with hazardous air pollutants, and eliminating or reducing the use of ozone-depleting substances.

### **1-5.4 WATER QUALITY AND REEF PROTECTION**

The standards for water quality, reef protection and reclaimed water (Section 3-2) standards are derived from 40 CFR 100-140 and 400-403, which establish regulations implementing provisions of the CWA, as amended. The Marine Water Quality and Earthmoving Regulations of the RMI also were consulted. The Standards apply to surface water, groundwater, and coastal marine water, including coastal reefs. Reclaimed water standards are derived from

USEPA guidelines and state regulations. The Safe Drinking Water Act and the Primary and Secondary Drinking Water Regulations were consulted for groundwater quality standards.

Freshwater resources at USAKA consist of rainwater obtained from catchments and groundwater lenses beneath the larger islands. Marine resources include both lagoons and the ocean, which furnish habitats in the shallow marine water for plants and animals. Numerous species are of subsistence value to the Marshallese.

Except for several point and nonpoint sources, the marine water around USAKA is generally free of pollution. Water quality is maintained by the natural conditions of tidal and trade-wind currents that dilute and transport pollutants. Water quality can be degraded by wastewater, thermal discharges, stormwater runoff, sandblasting and construction debris, solid waste disposal, and landfill leachate.

The water quality and reef protection standards deviate from 40 CFR 100-140 and 400-403 in that they address only substantive controls or requirements. Provisions relating to state program requirements, reporting, grants and delegations are not included. In addition, these Standards establish provisions for protecting groundwater quality that go beyond those established by U.S. statutes and regulations. The water quality and reef protection standards are applicable to all functions and facilities at USAKA without exception.

The Standards require USAKA to submit to the Appropriate Agencies a water quality management plan similar in content to that required under U.S. statutes and regulations. The plan must identify wetland and coastal areas where dredging, quarrying, or discharge of dredged or fill material is prohibited; nonpoint sources of pollution; sources of groundwater contamination; reef resources and the management and control practices necessary for protecting them; and water bodies that do not comply with the Standards. The plan also must assess the nature and extent of stormwater discharges and include a discussion of management and control practices that ensure compliance with water quality standards.

A DEP must be prepared before new point sources are constructed or begin discharging to the waters of the RMI.

### **1-5.5 DRINKING WATER QUALITY**

The standards for drinking water quality (Section 3-3) are based on (1) applicable sections of 40 CFR 141 through 143, which establish primary and secondary drinking water regulations and implementation and enforcement provisions according to the SDWA, as amended, and on (2) other related regulations and guidance applicable to public water systems.

The primary source of fresh water at USAKA is rain, which is collected through catchments or is pumped from the groundwater lenses after it percolates through the soil. Protection from degradation is of primary concern at USAKA because catchment areas for rainwater and a shallow lens-well system for fresh water are the primary sources of drinking water at USAKA and demand for fresh water generally exceeds the rain that is collected in the catchments.



Kwajalein and Roi Namur have 12 shallow horizontal infiltration galleries that skim fresh water from the uppermost part of the thin lens.

The quality of fresh water can be affected by stormwater that is rich in organic compounds draining into catchment areas from adjacent airport runways and taxiways, overpumping of groundwater lenses, discharge of fuel and other hazardous materials, and changes that occur during collection, storage, and treatment of the source water.

In general, the Standards adhere to U.S. statutes and regulations except that they clarify applicable provisions to address conditions at USAKA. The Standards use the monitoring requirements for a community of 10,000 even though USAKA has a population of only 3,000. Using the monitoring requirements for a population of 10,000 increases the frequency of testing and the number of constituents tested. The Standards retain all U.S. health-based requirements. All public water systems at USAKA are subject to the standards for drinking water, which establish maximum contaminant levels (MCLs) for organic chemicals, inorganic and microbiological contaminants, turbidity, and radioactivity. Treatment techniques are required in lieu of MCLs to ensure the removal of 99.9 percent of *Giardia lamblia* cysts, and 99.99 percent of viruses and 99 percent of *Cryptosporidium*.

MCL goals (MCLG) are established for organic and microbiological contaminants and disinfectant byproducts. The Standards also establish maximum desirable contaminant levels (MDCL) for the aesthetic characteristics of drinking water. Because of the fragile nature of USAKA's supplies of fresh water and the potential for degradation, the Standards require filtration for all sources of surface water and groundwater and eliminate the determination of the need for filtration that is required by U.S. statutes and regulations.

The Standards have adopted the current lead and copper rule of the SDWA, which includes provisions for monitoring and treating lead and copper in plumbing and source water.

A DEP must be prepared for construction of a new treatment facility or installation of a new treatment process for potable water.

## **1-5.6 ENDANGERED SPECIES AND WILDLIFE RESOURCES**

The standards for endangered species and wildlife resources (Section 3-4) are derived primarily from 50 CFR 17, 23, 402, 424, and 450-452. Those parts of 50 CFR establish regulations implementing provisions of the Endangered Species Act (ESA), as amended, and other regulations applicable to wildlife resources having substantial regional significance. The coordination procedures for other fish and wildlife resources are derived from the Fish and Wildlife Coordination Act (FWCA). Other U.S. statutes embodied in these Standards are the Migratory Bird Conservation Act (MBCA) and the Marine Mammal Protection Act (MMPA). In addition to U.S. laws and regulations, wildlife-protection statutes from the RMI were used to obtain a list of native species about which consultation will be required if they are affected by actions of USAKA. The consultation procedures for endangered species and their habitats are derived from 50 CFR 401.01 through 402.16 but have been streamlined to simplify the

consultation process because consultation may be conducted on various species, including RMI-protected species.

Kwajalein Atoll has a variety of unique plant and animal species that require special regulatory consideration. The coral reef that is a habitat for various species is sensitive to pollution from sewage discharge, sediment accumulation, and dredging and filling. Rare, threatened, and endangered terrestrial and marine species, including sea turtles, giant clams, and seagrasses, are present at USAKA and in the surrounding ocean.

Plant species ranging from broadleaf forests to exotic specimens characterize the flora of the atoll. Native plant species at USAKA provide breeding and feeding habitats for native and resident birds, breeding seabirds, migratory shorebirds, and freshwater birds. Plant species also provide protection from wind desiccation and support for animal species of special concern. Clearings for buildings, runways, and other structures have resulted in a net loss of nesting habitat and a decrease in the populations of some bird species.

The Standards protect species at USAKA that are listed or are candidates, proposed, or petitioned for designation as endangered or threatened and their critical habitats under the U.S. process; incorporate procedures for evaluating effects on fish, wildlife, and plants; and expand protection of marine mammals, migratory birds, and habitats of local or regional significance. The Standards do not incorporate parts of U.S. statutes and regulations that address specific exemptions, state cooperative agreements, permits based on economic hardship, special rules for threatened wildlife, the process of listing and designating critical habitats, experimental populations, certain regulations pertaining to the Convention on International Trade in Endangered Species (CITES), and the sections pertinent to special issues, such as manatee-protection statutes. The Standards establish requirements that incorporate species protected under RMI laws. The Standards also require USAKA to offer the Appropriate Agencies the opportunity to participate in the consultation process for activities that may result in an adverse effect on fish and wildlife resources for species and critical habitats that are listed in appendices 3-4A through 3-4E. Coordination with the designated agency, either USFWS or USNMFS, is required when assessing the potential for activities to have a significant effect on migratory birds, terrestrial and marine species, and their habitats of biological significance (appendices 3-4F, 3-4G, and 3-4H).

U.S. statutes and regulations require biological assessments for major construction activities or when the proponent of a project identifies the potential to affect a threatened or endangered species or its critical habitat adversely. The Standards also require biological assessments that develop comparable analysis but do not specify preparation for major construction activities. If USFWS or USNMFS prepares an opinion that is adverse and if the proposed activity is likely to jeopardize the continued existence of the species, USAKA can decide to proceed with the proposed activity after preparing a DEP.

## **1-5.7 OCEAN DISPOSAL**

The standards for ocean disposal (Section 3-5) are derived primarily from 40 CFR 220 through 233 and 33 CFR 324, which establish regulations for implementing provisions of the Ocean Dumping Act (ODA). Additional sections are derived from parts of the CFR for discharge of dredged or fill material or material designated for dredging or excavation or for filling of water and from Section 404 of the Clean Water Act (CWA). Regulations of, and previous agreements with, RMIEPA have been consulted, as have MARPOL, 73/78, and the London Dumping Convention. Also reviewed were the Convention on the Territorial Sea and Contiguous Zone, 1958; the Convention on the Law of the Sea, 1982; and the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, 1990.

The marine water at USAKA is generally pollution-free because of the strong wave-driven currents that contribute to the mixing of ocean water and lagoon water. In the past, bulky metallic wastes were disposed in the ocean by USAKA under a permit issued by USEPA. The permit has expired, and no new permits have been issued. A "Memorandum of Understanding" between USAKA and USEPA was signed in 1989, allowing disposal once every 3 months at an annual limit of 2,000 tons. Scrap metal was disposed of at a designated disposal site 2.1 miles west of Kwajalein Atoll, South Pass, under a MOU that existed between USEPA and USAKA, concurred in by the RMIEPA, between 1989 and 1992.

The standards for ocean disposal differ from U.S. statutes and regulations in that they call for a case-by-case assessment of the need for ocean disposal and eliminate state certification programs. The Standards address the process of designating and monitoring sites for ocean disposal and the occurrence of individual ocean disposal events. For selecting and designating disposal sites, both the Standards and the U.S. statutes and regulations require that the cumulative effects of previous and potential discharges be considered and that an Environmental Impact Statement be prepared.

In cases of individual ocean disposal events, the Standards use performance criteria that are reviewed on a case-by-case basis to determine whether to allow disposal, whereas the U.S. statutes and regulations include a separate set of procedures for assessing all proposed designations. For each ocean disposal event USAKA must prepare a DEP in which the environmental effects of the proposed disposal action, the need for ocean disposal, alternatives to ocean disposal, and the effect of the proposed action on aesthetic, recreational, and economic values and on cultural features of historical importance are evaluated. This procedure consolidates into a single process the four types of reviews required for activities in the United States. In addition to performance criteria, specific prohibitions on ocean disposal include the types of materials expressly prohibited, such as radioactive materials, and the establishment of limits for specific waste constituents.

## **1-5.8 MATERIAL AND WASTE MANAGEMENT**

The standards for material and waste management (Section 3-6) are derived from a composite of U.S. statutes and regulations addressing the use and management of hazardous

material and solid waste in RCRA; the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); TSCA; CWA; and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). RMIEPA regulations have also been consulted.

The hazardous and toxic wastes that are generated at USAKA include solvents, acids, photographic processing wastes, ignitable wastes, lead acid batteries, and polychlorinated biphenyl (PCB) transformer oils. Existing sources include power plants, vehicle maintenance areas, corrosion-prevention and painting operations (waste paint and solvents), dry cleaners, airfield operations, transformers (PCBs), and pest management operations.

Progress has been made in managing toxic and hazardous wastes, but some identified problems remain, including the continued use of chlorinated solvents in shops and power plants.

The goal of regulating material and waste management is to minimize the procurement, use, storage, and transportation of all substances that might endanger the environment and the health and safety of the population. The objective of the standards for material and waste management is to identify, classify, and manage in an environmentally responsible manner (including recycling) all materials imported for use at USAKA. Material and waste management applies to all materials that are imported or purchased for use on USAKA that have the potential to affect the environment adversely. Before hazardous materials or petroleum products are imported to USAKA, a hazardous material management plan (HMMP) must be prepared outlining the management procedures for storage, use, transportation, and disposal of those products. The Standards classify all materials as either general-use materials, hazardous materials, petroleum products, or prohibited materials.

Although these Standards integrate requirements that are comparable to those applied in the United States, the Standards differ in several ways. After materials are introduced to USAKA and identified and classified, they are subject to requirements for security, storage, and inspection that are not in U.S. statutes and regulations. The requirements for treatment, storage, and transportation of medical waste in these Standards are not included in U.S. statutes and regulations. The treatment of hazardous wastes at USAKA without a DEP is prohibited. In addition, hazardous wastes must be shipped off the island. Also prohibited at USAKA are all new uses of PCBs, introduction of new PCBs, and introduction of PCB articles or PCB items.

The Standards require preparation and implementation of a contingency plan [the Kwajalein Environmental Emergency Plan (KEEP)], for responding to releases of oil, hazardous material, pollutants, and contaminants to the environment. The KEEP (Section 3-6.4.1) is substantively similar to the spill prevention, control, and countermeasure (SPCC) plan required in the United States.

The Standards include a process for evaluating and, as necessary, remediating sites contaminated from releases. The process is similar to the one outlined in CERCLA and includes full participation by the public and Appropriate Agencies.

## **1-5.9 CULTURAL RESOURCES**

The standards for cultural resources (Section 3-7) are derived from the National Historic Preservation Act (NHPA). The act establishes federal responsibilities and implementing regulations in 36 CFR 800 and in the U.S. Archaeological and Historic Preservation Act (AHPA)(P.L. 93-291). The regulations for promoting cultural preservation that are in the RMI's Historic Preservation Act 1991 (45 MIRC, Chapter 2) also were consulted.

Cultural resources are material remains of human activity that are significant in the history, prehistory, architecture, or archaeology of the RMI. They include prehistoric resources (produced by preliterate indigenous people) and historic resources (produced since the advent of written records).

The standards for cultural resources are similar, with a few exceptions, to the U.S. statutes and regulations on which they are based. Under the Standards, the U.S. Advisory Council on Historic Preservation (ACHP) does not have a formal role, but may be used as a resource by the RMI Historic Preservation Officer (RMIHPO). The RMI ACHP reviews documentation of interaction between USAKA and RMI EPA in certain instances and may be called upon to mediate disagreements between the RMI HPO and the Commander, USAKA. Under the Standards, the RMIHPO shall execute the function of the state historic preservation office. All communication between USAKA and the RMIHPO is conducted through RMIEPA. The Standards substitute the RMI National Register of Historic Places and its listing criteria for the corresponding U.S. Register and listing criteria.

The Standards require submitting to the Appropriate Agencies a draft programmatic DEP on protecting cultural resources at USAKA that must address the potential effects of routine operations at USAKA on cultural resources and the procedures for identifying potential cultural resources in areas where they are not known. The programmatic DEP also must establish mitigation procedures for all adverse effects on previously unidentified cultural resources. For proposed activities not covered by the programmatic DEP, a specific DEP that discusses the potential for effects on cultural resources is required.

## **1-6 FORMAL ADOPTION**

The formal adoption process for the Standards consisted of several interrelated and parallel actions. The Standards were first reviewed by U.S. agencies and RMIEPA. The reviews were conducted by all U.S. agencies having domestic jurisdiction over the environmental categories covered in the standards. The Standards were also evaluated within the framework of a Supplemental EIS (SEIS) to the 1989 EIS prepared under NEPA for proposed activities at USAKA. The 1993 SEIS evaluated the potential environmental effects of implementing the Standards. Public hearings sponsored by the U.S. Army on the Standards were held in the RMI in conjunction with the SEIS process. After completion of the SEIS, the Standards were reviewed and approved by the Interagency Group for Freely Associated State Affairs (IAG), chaired by the U.S. Department of State.

Government-to-government consultations were conducted between the U.S. and the RMI in early December 1995. These consultations were concluded with RMI formal concurrence on 4 December 1995. The Standards became effective on 4 December 1995.

Periodic review of the standards is mandated by Section 2-22. The reviews are performed by a project team consisting of representatives from the Appropriate Agencies, USASMDC and USAKA. The periodic reviews are undertaken to ensure currency, accuracy, completeness, and adequacy of implementation. Any proposed revisions to the Standards resulting from the reviews must be formally approved by the U.S. and RMI Governments through formal consultations before they become effective.

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## **2-1 INTRODUCTION**

This part of the Standards establishes a procedural framework for implementing and complying with applicable environmental standards at USAKA. The objective of the procedures is to facilitate implementation of the Standards in the applicable environmental categories listed below so that public health and safety and the environment of USAKA are protected. The procedures are for reporting, notification, monitoring, study and analysis, training, transportation of hazardous substances, facility requirements, records keeping, planning, emergency equipment, auditing, compliance assurance, oversight, conflict resolution, technical support, periodic review, severability, funding, and exemptions.

- (a) Air Quality
- (b) Water Quality and Reef Protection
- (c) Drinking Water Quality
- (d) Endangered Species and Wildlife Resources
- (e) Ocean Disposal
- (f) Material and Waste Management
- (g) Cultural Resources

## **2-2 SCOPE**

These Standards shall govern all U.S. Government activities at USAKA and, all USAKA activities within the RMI, including activities on the 11 islands controlled by USAKA, the Mid-Atoll Corridor, and the territorial waters of the RMI, which are defined in Section 3-8.

## **2-3 AUTHORITY**

The authority for establishing the Standards is presented under Section 161 of the Compact. The procedures and standards are based on U.S. statutes and regulations cited in Section 1-4 of Part 1.

## **2-4 SUMMARY OF CHANGES**

The procedures in Part 2 of the Standards establish mechanisms to govern activities at USAKA that provide participation and oversight by both U.S. and RMI agencies, as well as public scrutiny. Procedures are established to resolve conflicts and issues of noncompliance in a way that recognizes the status of USAKA in U.S. environmental statutes as well as the special governmental relationship between the U.S. and RMI established by the Compact. The traditional U.S. model of regulatory permitting and judicial enforcement by either U.S. or state agencies is not applicable in this situation. In general, the Standards establish a governing

process that relies primarily on consultation and agreement. Several sections of the Procedures contain provisions for auditing, compliance assurance, oversight, and conflict resolution for addressing both the particular environmental conditions at USAKA and the special relationship between the U.S. Government and the RMI as specified in the Compact.

## **2-5 USAKA RESPONSIBILITIES**

USAKA shall comply with all requirements of the Standards. For the purposes of the Standards, USAKA is deemed to be the owner or operator of all U.S. Government facilities and activities in the Marshall Islands that are associated with the 11 leased islands, the Mid-Atoll Corridor, and the Ronald Reagan Ballistic Missile Defense Test Site-Kwajalein Atoll. Other federal agencies and contractors that use the areas controlled by USAKA are deemed to be sponsored by USAKA in their activities. The Commander, USAKA, shall inform all contracting officers serving USAKA of the Standards and their applicability to contractor operations at USAKA. The Commander shall request that contracting officers use all contract mechanisms, to include sanctions when necessary, to ensure their contractors comply with the Standards. The Commander shall also request that contracting officers inform USAKA in writing in any case a contracting officer believes the Standards do not apply to the contractor's activities at USAKA or should not be applied due to requirements of other laws and regulations. The Commander shall provide the Appropriate Agencies (Section 2-6.1) a copy of any such assertion by a contracting officer and a written copy of USAKA's determination. USAKA is responsible for ensuring that all tenants, including contractors conducting activities at USAKA or within the RMI under contract to USAKA, comply with the requirements of the Standards. The official responsible for ensuring compliance with the Standards is the Commander, USAKA. To implement the Standards, agencies and contractors at USAKA shall consult applicable guidance documents.

## **2-6 APPROPRIATE AGENCIES, AGENCY REPRESENTATIVES AND PROJECT TEAM**

### **2-6.1 APPROPRIATE AGENCIES**

Appropriate agencies have been designated to expedite the transfer of information about USAKA. These agencies are responsible for: reviewing and commenting on proposed actions by USAKA that relate to public health and safety and protection of the environment; insuring that the appropriate offices and individuals within each agency are informed; and performing the periodic review of the standards described in Section 2-22 as part of the project team described in Section 2-6.3 below. In addition to the formal assignment of responsibilities in these Standards, the Appropriate Agencies shall cooperate with and assist USAKA in complying with the provisions of these Standards. Appropriate agencies shall address their USAKA communications to the Commander, USAKA. The term "Appropriate Agencies" is used throughout these Standards and refers to the following agencies, points of notification and their representatives as specified in Section 2-6.2. In situations involving a dispute or consideration of a Document of Environmental Protection (DEP) a distinction may be made between U.S. and RMI "Appropriate Agencies." The appropriate U.S. agencies are those listed below. The appropriate RMI agency

is the RMIEPA identified below and, in the case of cultural or historical resources matters, includes the RMI Historic Preservation Office.

2-6.1.1 United States Environmental Protection Agency (USEPA), Region IX, Pacific Islands Office; San Francisco, California.

2-6.1.2 Republic of the Marshall Islands Environmental Protection Authority (RMIEPA), Republic of the Marshall Islands.

2-6.1.3 United States Fish and Wildlife Service (USFWS), Pacific Islands Fish and Wildlife Office; Honolulu, Hawaii.

2-6.1.4 United States National Marine Fisheries Service (USNMFS), Pacific Islands Area Office; Honolulu, Hawaii.

2-6.1.5 United States Army Engineer District, Honolulu (USAEDH); Fort Shafter, Hawaii.

## **2-6.2 AGENCY REPRESENTATIVES**

Except as otherwise specified in Section 2-19, the individuals responsible for representing the U.S agencies identified above in Section 2-6.1 shall be the individuals designated by the agency officials identified in Section 2-19.2.1.

Unless otherwise designated by the Government of the Republic of the Marshall Islands, the representative for the RMIEPA shall be the General Manager of the RMIEPA.

## **2-6.3 PROJECT TEAM**

A Project Team shall be responsible for conducting the periodic reviews described in Section 2-22. The Project Team shall consist of the agency representatives identified in Section 2-6.2 above, or their designees, and a representative designated by the Deputy Commanding General of the United States Army Space and Missile Defense Command (USASMDC). Co-Chairpersons of the Project Team shall be the representatives from the USEPA and USASMDC.

## **2-7 REPORTING AND NOTIFICATION REQUIREMENTS**

These Standards provide mechanisms for USAKA to inform the Appropriate Agencies and, in some cases, the general public of environmental conditions, planned activities, and emergency situations. The reporting mechanisms include, but are not limited to: providing copies of reports, plans and inventories; providing data and reports concerning compliance with requirements; describing proposed activities and environmental controls; responding to notifications of non-compliance by Appropriate Agencies; notifications of changed circumstances; and emergency notifications. The reports and notifications identified in this section do not supplant any reporting requirements that may be required in a Document of

Environmental Protection (DEP) completed in accordance with Section 2-17.3, but may satisfy some reporting requirements of a DEP.

## **2-7.1 REPORTS, INVENTORIES AND PLANS: FREQUENCY AND DISTRIBUTION**

Unless otherwise specified in a DEP or these Standards, all reports shall be submitted to the Appropriate Agencies within 30 days of completion of the report.

### **2-7.1.1 Reports on air quality (Section 3-1):**

- (a) Air-toxics reports as specified in Section 3-1.11.1; every 3 years.
- (b) Ozone-depleting chemicals; every 3 years for the ozone depleting substances listed in Appendix 3-1B as specified in Section 3-1.11.2.
- (c) Inventory of stationary sources of air pollutants; upon completion of any new DEP for a stationary source as specified in Section 3-1.11.3 thereafter.
- (d) Upon request from RMIEPA, USAKA shall provide information and data regarding USAKA activities as may be needed by the RMI for reporting associated with the Montreal Protocol on Substances that Deplete the Ozone Layer.

### **2-7.1.2 Reports on water quality, reef protection and reclaimed water (Section 3-2):**

- (a) Water Quality Management Plan: every two years as warranted in accordance with Sections 3-2.5.1(a) and (e).
- (b) Reports on wastewater-discharge monitoring, as specified in Section 3-2.12.1(a).

### **2-7.1.3 Reports on Drinking Water (Section 3-3):**

- (a) Results of drinking water tests from monitoring activities required under Section 3-3, quarterly.
- (b) Reports on construction materials in distribution systems as specified in Section 3-3.5.1.4, as needed.
- (c) Certifications on acrylamide and epichlorohydrin use as specified in Section 3-3.5.2.1(c), as needed.
- (d) Reports on filtration as specified in Sections 3-3.5.4.1, as needed.
- (e) Reports for invalidating total-coliform positive samples as specified in Section 3-3.5.5.2(c), as needed.

- (f) Drinking water Consumer Confidence Reports required under Section 3-3.8.2; annual.

**2-7.1.4 Reports on Endangered Species and Wildlife Resources (Section 3-4):**

- (a) Preliminary conclusions on effects on endangered and threatened species and critical habitats as specified in Section 3-4.5.3(b); as needed
- (b) Preliminary conclusions on the effects on other wildlife resources as specified in Section 3-4.6.3(b); as needed

**2-7.1.5 Reports on Ocean Disposal (Section 3-5): (Reserved)**

**2-7.1.6 Reports on Materials and Waste Management (Section 3-6):**

- (a) Kwajalein Environmental Emergency Plans (KEEP), described in Section 3-6.4.1; submitted as developed and after each modification; review every two years.
- (b) Inventory of PCB items and transformers as specified in Section 3-6.5.1(c)(2); annually
- (c) Reports on hazardous waste shipments referenced in Section 3-6.5.2(b)(1)(iii)(B); every other year
- (d) Reports on manifest exceptions as discussed in Section 3-6.5.2(b)(1)(iii)(C)(bb); submitted by a generator of hazardous waste within 75 days of the date the initial transporter receives the hazardous waste; required only if the generator did not receive a copy of the manifest that was signed by the facility owner; as needed
- (e) Copies of manifest and a statement that a confirmation of a hazardous waste delivery has not been received as specified in Section 3-6.5.2(b)(1)(iii)(C)(cc)
- (f) Informational copies of hazardous waste transporter identification number request as specified in Section 3-6.5.2(b)(1)(iv); as needed
- (g) Reports on crisis exceptions for pesticide use as specified in Section 3-6.5.4(c)(2)(iii)(B); as needed
- (h) Solid Waste Management Plan as specified in Section 3-6.5.7(c)(6)(i); review every two years.
- (i) Closure/Postclosure Plan [Section 3-6.5.7(c)(6)(vii)]; as needed
- (j) Incident reports as specified in Section 3-6.5.8(c); as needed
- (k) Report on basis of NFA/RC as specified in Sections 3-6.5.8(f)(1) and 3-6.5.8(m)(1); as needed

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- (l) Removal Action Memoranda as specified in Section 3-6.5.8(g)(2); as needed
- (m) Verification assessments as required by Section 3-6.5.8(i)(2); as needed
- (n) Preliminary Assessment summary reports as specified in Section 3-6.5.8(j); as needed
- (o) Reports on Site Investigations and data as specified in Section 3-6.5.8(l); as needed
- (p) Proposed remedial action plans as specified in Section 3-6.5.8(n)(2)(ii); as needed

**2-7.1.7 Reports on cultural resources (Section 3-7):**

- (a) Historic preservation plan as specified in Section 3-7.1; as revised. Plan submitted to RMIEPA, RMIHPO, RMIACHP, USAEDH, and USEPA rather than all Appropriate Agencies
- (b) Data recovery plans as specified in Section 3-7.5.5(b); as needed. Plans submitted to RMIEPA, RMIHPO, RMIACHP, USAEDH and USEPA
- (c) Findings of no adverse effects on historical or cultural resources as specified in Section 3-7.5.5(c); as needed. Plans submitted to RMIEPA, RMIHPO, USAEDH and USEPA.

**2-7.2 NOTIFICATION TO APPROPRIATE AGENCIES**

In some cases, notifying the Appropriate Agencies may be a prelude to initiating formal consultation among agencies and preparing a DEP (Section 2-17.3). In other cases, notification may be for the purposes of: informing the Appropriate Agencies that an activity or event has taken place that has caused or has the potential for causing harm to public health and safety and the environment; initiating consultation other than for purposes of preparing a DEP; or advising the Appropriate Agencies of an action taken or contemplated by USAKA. In all cases, the notice shall be timely made to the Appropriate Agencies and contain the relevant information described in Section 2-7.2.2.

**2-7.2.1 ACTIVITIES OR ACTIONS REQUIRING NOTIFICATION**

The following are the actions or events that require notification:

(a) General Notifications

(1) Activities or actions that have the potential for causing an environmental standard adopted under the Standards to be exceeded

(2) Activities or actions that add an additional environmental load or threat to the air, the water, or the land in excess of what is authorized by these Standards. This may occur when there is a significant change in operations that requires additional stationary sources having the

potential to pollute the air (such as diesel generators), requires overloading the sewage treatment plant, establishes or changes a HMWPP storage facility, or requires storing hazardous waste or PCBs in excess of the stated capacity of the temporary staging facilities. Before undertaking the activity or action, USAKA shall indicate whether preparation of a DEP (Section 2-17.3) is required for the control.

(3) Activities or actions that would modify or add a new environmental control, such as an air-pollution-control device, a water treatment process, a drinking water treatment process, a treatment method for hazardous waste, or a treatment or disposal method for solid waste. In addition to furnishing the information required by Section 2-7.2.2 of these procedures, USAKA shall furnish a technical drawing and a description of the new or modified environmental control, an analysis of how the control will meet all applicable environmental standards, and a timetable for installation. Before operating the control or making the modification, USAKA shall indicate whether preparation of a DEP (Section 2-17.3) is required for the control.

(b) Notifications Required by Procedures (Part 2)

- (1) Assertion by a contracting officer that these Standards are not applicable to a contractor's activities (Section 2-5)
- (2) Completion of an internal audit [Section 2-16.1(a)]
- (3) Response to agency comments on an internal audit [Section 2-16.1(c)(2)]
- (4) Receipt of a final external audit report [Section 2-16.2.2(b)]
- (5) Preparation of corrective action plan for external audit findings [Section 2-16.2.2(b)]
- (6) Intent to seek "imminent need to proceed" authorization [Section 2-17.3.7(a)]
- (7) Receipt of authorization to proceed under "imminent need to proceed" provisions [Section 2-17.3.7(a)]
- (8) Preparation of corrective action plan for Appropriate Agency inspection findings (Section 2-17.4)
- (9) Response to a Notice of Deficiency (Section 2-18.3)
- (10) Preparation of a "Letter of Commitment" (Section 2-18.3).

(c) Air Quality Notifications (Section 3-1)

- (1) Authorization of open burning as specified in Sections 3-1.7.1(a) or (b).



[2-7.2.1(c)]

(2) Intent to authorize sale, distribution or use of ozone-depleting substance outside of USAKA but within RMI as specified in Section 3-1.11.2(d). Notification to be made to RMIEPA.

(d) Water Quality and Reef Protection Notifications (Section 3-2)

(1) Consideration of applicable groundwater standard as specified in Section 3-2.6.1.

(2) Consideration of an exception to groundwater antidegradation requirements as specified in Section 3-2.6.2(c).

(e) Drinking Water Notifications (Section 3-3)

(1) Consideration of alternative analytical techniques as specified in Section 3-3.4.4(b)(2).

(2) Consideration of corrosion control treatment as specified in Section 3-3.5.1.2(b)(4)(iii)(C)(aa).

(3) Consideration of deleting VOC sampling results as specified in Section 3-3.5.2.2(a)(2)(iii).

(4) Consideration of deleting SOC sampling results as specified in Section 3-3.5.2.2(b)(2)(iii).

(5) Consideration of turbidity monitoring protocols as specified in Section 3-3.5.4.2(b)(1).

(6) Invalidation of total coliform samples as specified in Section 3-3.5.5.2(c)(1).

(7) Consideration of changing disinfection practices as specified in Section 3-3.6.2.2(f).

(f) Endangered Species and Wildlife Notifications (Section 3-4) (Reserved)

(g) Ocean Disposal Notifications (Section 3-5)

(1) Emergency disposal of materials into the waters of the RMI as specified in Section 3-5.5.5(b).

(h) Material and Waste Management Notifications (Section 3-6)

(1) A spill exceeding the reportable quantity of any Hazardous Material, Waste or Petroleum Product (HMWPP) or greater than 110 gallons of any petroleum product.

(2) Consideration of a 30 day extension for storage of hazardous waste as specified in Section 3-6.5.3(b)(1)(v).

- (3) Consideration of authorizing sale or distribution of a HMWPP to a person outside of USAKA but within the RMI as specified in Section 3-6.5.4(a)(2). Notification to and consultation with RMIEPA.
- (4) Consideration of suspension or reinstatement of pesticide applicator certifications as specified in Section 3-6.5.4(b)(2)(ii)(D).
- (5) Consideration of authorizing a crisis exception for pesticide use as specified in Section 3-6.5.4(2)(iii)(B) - at least 36 hours prior to authorization.
- (6) Disposal of ordnance under imminent and substantial danger circumstances as specified in Section 3-6.5.7(a)(3).
- (7) Activities or actions having the potential to create more than 1 kilogram of acutely hazardous waste as specified in Section 3-6.5.7(b)(3).
- (8) Consideration of alternative technologies for treating regulated medical waste as specified in Section 3-6.5.7(c)(3)(i)(B).
- (9) Consideration of alternative cover materials as specified in Section 3-6.5.7(c)(6)(iv)(B)(bb).
- (10) Identification of actual or potential groundwater contamination resulting from modifications of liner and leachate control requirements as specified in Section 3-6.5.7(c)(6)(v)(D).
- (11) Determination that groundwater assessment monitoring is not appropriate as specified in Section 3-6.5.7(c)(6)(vi)(C).
- (12) Determination to delete parameters or monitoring sites for groundwater assessment monitoring as specified in Section 3-6.5.7(c)(6)(vi)(C)(aa)
- (13) Consideration of alternative groundwater protection standards as specified in Section 3-6.5.7(c)(6)(vi)(C)(bb)(IV).
- (14) Determination that groundwater protection standards have been exceeded as specified in Section 3-6.5.7(c)(6)(vi)(C)(dd).
- (15) Consideration of feasibility study methodology as specified in Section 3-6.5.8(n)(2).
- (16) Consideration of verification assessment as specified in Section 3-6.5.8(r).
- (17) Consideration of further remedies and monitoring as specified in Section 3-6.5.8(r)(4).

**[2-7.2.1(i)]**

**(i) Cultural Resources Notifications (Section 3-7)**

(1) Determination that an activity constitutes an “undertaking” as specified in Section 3-7.5.3(a). Notification to also be provided to the RMIHPO.

(2) Application of the “Criteria of Effect” to an “undertaking” as specified in Section 3-7.5.4(a)(1). Notification to also be provided to the RMIHPO.

(3) Determination that an “undertaking” has no adverse effect as specified in Section 3-7.5.4(b). Notification to also be provided to the RMIHPO.

(4) Discovery of previously unidentified cultural resources as specified in Section 3-7.5.7(a). Notification to also be provided to the RMIHPO.

**2-7.2.2 REPORTING INFORMATION**

Whenever notification is required under Section 2-7. 2.1 above, USAKA shall send to the Appropriate Agencies (or the specified agency) the following information, as relevant to the particular activity or action listed under Section 2-7.2.1:

- (a) Location and time of incident.
- (b) Type of activity or action.
- (c) Type of environmental media affected.
- (d) Name of substance or pollutant involved.
- (e) Threats to public health and safety and the environment.
- (f) Number of people involved.
- (g) Necessity for evacuation.
- (h) Estimated or actual amount of exceedance.
- (i) Need for remedial action.
- (j) Type of corrective action taken.
- (k) Technical assistance required.
- (l) Type of equipment being used.
- (m) Estimate of when compliance will be achieved.

- (n) Injuries or deaths that have occurred.
- (o) Threats or disturbances to the endangered species or wildlife resources listed in Appendices 3-4A through 3-4E.
- (p) Numbers of organisms of each species killed or disturbed, their conditions, the locations and conditions of the habitats, and the chances of recovery as listed in Appendices 3-4A through 3-4E.
- (q) Types of archaeological or historical resources; the significance of the resource that might be discovered, disturbed, or destroyed; and the determination of adverse effect or potential adverse effect on the resource (Sections 3-7.5.3 and 3-7.5.5).
- (r) Types and amounts of materials dumped into the waters of the RMI.

### **2-7.3 EMERGENCY AND PUBLIC NOTIFICATIONS**

All emergency and public notifications, except for notifications under Sections 2-7.3.1(e) and (f) below, shall be made concurrently to the public and the Appropriate Agencies.

#### **2-7.3.1 Emergency Notifications**

Within 24 hours of discovery of an emergency environmental condition, USAKA shall notify the public affected or potentially affected by the condition and the Appropriate Agencies by the most expeditious means available. Emergency environmental conditions are those that pose an immediate threat to human health, safety, or sensitive natural and cultural resources. Within 10 days following emergency notification, USAKA shall submit written notification of the event to the Appropriate Agencies that contains, at a minimum, the relevant information described in Section 2-7.2.2. Emergency notifications shall be made for the following conditions and any other condition that the Commander, USAKA, determines to constitute an emergency condition:

- (a) Upsets or breakdowns of any wastewater or reclaimed water facility, including conveyance facilities, that could result in a significant hazard to public health associated with untreated or inadequately treated wastewater or reclaimed water.
- (b) Release or anticipated release of air pollutants that could result in exposure of the public posing a significant public health hazard. At a minimum, an emergency condition exists for releases of hazardous air pollutants in excess of a reportable quantity listed in Table 3-6C or ambient air concentrations exceeding or expected to exceed the following concentrations:  $\text{SO}_x$  -  $2,100 \mu\text{g}/\text{m}^3$ ; CO -  $46 \text{ mg}/\text{m}^3$ ; Ozone -  $1,000 \mu\text{g}/\text{m}^3$ ; or  $\text{NO}_2$  -  $3,000 \mu\text{g}/\text{m}^3$ .
- (c) Any Tier 1 violation of a drinking water standard as defined in Table 3-3.8.1.
- (d) Spills or releases of any acutely hazardous waste listed in Table 3-6B.2(c)(5), any hazardous material or waste exceeding the reportable quantity given in Table 3-6C or any

[2-7.3.1(d)]

petroleum product to surface waters in excess of 110 gallons that could result in exposure to the public or threaten wildlife or cultural resources.

(e) Emergency environmental conditions or actions that will result in the taking of endangered or threatened species, or destruction of critical habitats (Appendices 3-4A through 3-4E).  
Emergency notification to Appropriate Agencies only.

(f) Emergency undertakings potentially affecting cultural resources as specified in Section 3-7.5.8. Emergency notification to Appropriate Agencies and the RMIHPO only.

## **2-7.3.2 PUBLIC NOTIFICATIONS**

Public notifications shall be made by USAKA to advise the public of an activity or action that USAKA has taken or is planning, as described below. In some cases, public notification is given to invite comments from the public on planned activities. Public notification shall be made through means that are widely available and consulted by the public at USAKA and the RMI. The means would normally include publication in the *The Kwajalein Hourglass* and *The Marshall Islands Journal*, posters or bulletins displayed in public places, announcements on the “Roller”, and radio announcements and shall be effective for the locations indicated below. Public notifications shall be timely made. Activities and announcements requiring public notification include the following:

(a) A draft DEP (Section 2-17.3.4) has been submitted to the Appropriate Agencies and is available for 30-day public comment. (RMI)

(b) Violation of the standards for reclaimed water in Appendix 3-2J has occurred as provided in Section 3-2.7.6(d). (Kwajalein Atoll)

(c) Violation of a drinking water standard as specified in Section 3-3.8.1. (Kwajalein Atoll)

(d) USAKA becomes aware that there is a listing of a new threatened or endangered species, a critical habitat, or other wildlife resources; a designation or a change in the status of the resource; or a change in the determination of critical habitat that is applicable to USAKA (Sections 3-4.5.1 and 3-4.6.1). (Kwajalein Atoll)

(e) Availability of a report describing the rationale for a “No Further Action/Response Complete” finding, as described in Section 3-6.5.8(f)(1). (Kwajalein Atoll).

(f) Availability of a Removal Action Memorandum for 30-day comment period, as specified in Section 3-6.5.8(g)(2). (Kwajalein Atoll)

(g) Availability of a formal report on a verification assessment for 30-day review, as specified in Section 3-6.5.8(i)(2). (Kwajalein Atoll)

- (h) Availability of a Site Inspection and data evaluation report for 30-day comment period, as specified in Section 3-6.5.8(l). (Kwajalein Atoll)
- (i) Availability of a proposed remedial action plan for 30-day comment period, as specified in Section 3-6.5.8(n)(2)(ii) and (iii). (RMI)
- (j) Availability for review of a determination that revised cleanup standards and/or remedial action plan is required, as specified in Section 3-6.5.8(r)(2). (RMI)
- (k) USAKA becomes aware that there is a listing or determination of eligibility for the RMI National Register of Historic Places, as noted in Section 3-7.5.3(b). (Kwajalein Atoll)

## **2-8 MONITORING**

USAKA will monitor the environmental conditions at USAKA and the effectiveness of environmental controls and mitigation measures to ensure protection of public health, safety, and the environment. Collection of environmental data is required in all sections of these Standards and in agreed requirements of DEPs. USAKA and the Appropriate Agencies will utilize collected environmental data to: gauge the effectiveness of environmental controls; support studies and analyses of proposed and ongoing activities; design and initiate corrective measures; support revisions to these Standards; establish compliance status; advising the public of unsafe conditions; and assessing the overall environmental conditions at USAKA. In addition to the requirements specified elsewhere in these Standards and in DEPs, USAKA shall monitor new sources of noise at the time they are installed to ensure conformance with the U.S. Army's Environmental Noise Management Program.

## **2-9 (Reserved)**

## **2-10 DOCUMENTATION OF EMPLOYEE TRAINING**

All USAKA personnel who are engaged in: operating the control equipment or devices; handling, using, storing, transporting, disposing of or treating HMWPP or solid waste; collecting or analyzing environmental samples; responding to spills or releases; determining effects on wildlife or cultural resources; or otherwise involved in meeting the requirements of these standards shall be trained and possess any credentials or certificates required by these Standards [e.g., Sections 3-3.4.2 and 3-6.5.4(b)(2)(ii)(A)]. The training shall be documented and verified. Verification of the training must be noted in the employees training record, and the immediate supervisor, the shop foreman, or the job leader shall document that adequate training has been provided. USAKA personnel may receive on-the-job training in lieu of a formal course of study. Adequate training records shall be maintained, and personnel shall receive appropriate refresher training.

## **2-11 (Reserved)**

## **2-12 (Reserved)**

## **2-13 RECORDS KEEPING**

### **2-13.1 RECORD AVAILABILITY, STORAGE AND RETENTION**

USAKA environmental records shall be maintained for demonstrating compliance with these Standards. Unless classified for reasons of national security or protected for reasons of personal confidentiality (e.g., medical records), all records shall be available for examination by the Appropriate Agencies. The personnel or agency preparing the record shall be clearly identified in the document. Records shall be stored in an organized fashion in a central location and shall be made available for inspection within a reasonable time. Records required to be retained for more than 5 years may be stored by USASMDC in the continental United States.

### **2-13.2 RECORD RETENTION**

All records associated with compliance with or required by these Standards shall be maintained for at least five years unless another length of time is specified below or elsewhere in these Standards.

**2-13.2.1** Personnel-training records shall be preserved for 10 years beyond the period the employee is engaged in activities potentially affecting the environment at USAKA.

**2-13.2.2** Medical records of personnel shall be maintained for 30 years.

**2-13.2.3** All manifests shall be preserved for 3 years.

**2-13.2.4** All records on hazardous waste, laboratory results, and studies relating to those wastes shall be preserved for 3 years. Records on hazardous materials and their disposition shall be maintained until the materials are reclassified as hazardous wastes or recycled.

**2-13.2.5** Baseline studies, such as studies of air monitoring, noise monitoring, groundwater quality, and hydrogeology, shall be preserved indefinitely.

**2-13.2.6** Surveys of areas where solid waste has been managed, including treatment, storage, disposal, dispensing, and staging and corrective-action plans, shall be preserved for 30 years.

**2-13.2.7** Notices of Proposed Activity (NPAs), Notices of Continuing Activity (NCAs), Environmental Comments and Recommendations (ECRs), and DEPs (Section 2-17.3) for operating pollution-control devices; air emission sources; treatment plants; and treatment, storage, or disposal facilities shall be preserved for the duration of the activity plus 10 years.

**2-13.2.8** Records of ocean disposal shall be maintained for five years after the disposal site is no longer designated for ocean disposal.

**2-13.2.9** Documentation of actions taken under Section 3-6.5.8 to respond to or remediate the release of hazardous substances to the environment shall be preserved for 30 years.

**2-13.2.10** Maintenance records for public water systems shall be preserved for at least 10 years.

**2-14 (Reserved)**

**2-15 (Reserved)**

## **2-16 AUDITING: INTERNAL AND EXTERNAL**

### **2-16.1 PROTOCOLS FOR CONDUCTING AUDITS**

#### **2-16.1.1 Internal**

USAKA shall conduct internal environmental audits of the facilities and programs that have the potential for affecting public health or the environment. The internal audits shall be conducted at 4 year intervals in a year when an external audit is not conducted. The purpose of the environmental audits is to ensure compliance with the Standards through a self-inspection program. The audits shall be used to identify problems and to recommend corrective actions. USAKA shall identify environmental areas for audits, develop protocols for conducting the audits, and involve all levels of the organization in the audit process.

#### **2-16.1.2 External**

An agency independent of USASMDC, such as the Army Center for Health Promotion and Preventive Medicine (CHPPM) [formerly the Army Environmental Hygiene Agency (AEHA)], shall conduct an external environmental audit of USAKA once every four years. USAKA shall give the independent agency access to its records, reports, and other data pertinent to USAKA activities potentially affecting the environment.

### **2-16.2 REVIEW OF AUDITS**

#### **2-16.2.1 Internal**

(a) USAKA shall notify the Appropriate Agencies that an internal audit has been conducted within 14 days of completing an audit report and may, in the Commander, USAKA's discretion provide copies of the internal audit report to the Appropriate Agencies. This notification will document compliance with 2-16.1.1. USAKA shall thoroughly review all internal audit reports and promptly address all detected areas of noncompliance with these Standards.

(b) USAKA shall furnish the audit reports to USASMDC and other agencies as deemed appropriate by the Commander, USAKA. USASMDC may furnish copies of the audits to the Department of the Army (DA), U.S. Missile Defense Agency, National Aeronautics and Space Administration (NASA), the U.S. Air Force, the U.S. Army Corps of Engineers, the U.S.



**[2-16.2.1(c)]**

Department of Energy, and other agencies when their programs are affected by the audit findings.

(c) If the Commander, USAKA, or USASMD C provide the Appropriate Agencies with a copy of the internal audit report, the Appropriate Agencies shall:

(1) At their discretion comment on the audit reports, recommending additional areas for auditing, additional problem areas, and additional corrective actions.

(2) Refrain from initiating formal oversight as specified in Section 2-18 or invoking the procedure for conflict resolution (Section 2-19) as a result of the information in the auditing report provided USAKA identifies the problem, recommends appropriate corrective action, and adopts a reasonable schedule for achieving compliance that is mutually agreeable. USAKA shall have 30 days in which to respond to agency comments. If the agencies' comments are complex, USAKA and the agencies shall determine an appropriate response time.

(3) At their discretion issue a Notice of Deficiency (NOD) (Section 2-18.2) or an Environmental Opinion (Section 2-18.3) and invoke the conflict resolution procedure if a problem is not identified, no recommendation is made for correcting a problem, corrective action is not adopted, or a reasonable schedule is not mutually agreed on. In addition, the Appropriate Agencies may implement formal oversight procedures (Section 2-18) if the schedule for compliance is breached without sufficient justification and agreement is not reached on a new schedule.

**2-16.2.2 External**

(a) The independent agency shall issue external audits as a draft for review by USAKA, revealing all problems whether corrected immediately or not and presenting recommendations for corrective actions. USAKA shall have 60 days to review the report and develop a position or a corrective-action plan.

(b) Within 14 days of receipt of the final audit report from the auditing entity, USAKA shall notify the Appropriate Agencies that the final audit report has been received. USAKA shall prepare a corrective action plan to address any deficiencies representing violations of these standards within 60 days of receiving the final audit report, and shall provide the corrective action plan and a copy of the final audit report to the Appropriate Agencies within 75 days of receiving the final audit report.

(c) Appropriate Agencies may initiate the provisions in Sections 2-18 or 2-19 if the nature and extent of a problem is disputed, no recommendation is made to correct a problem in the corrective action plan, or a reasonable schedule for correcting a problem is not committed to by USAKA.

## **2-17 COMPLIANCE ASSURANCE**

This section discusses procedures for reviewing USAKA activities that have the potential for adversely affecting the environment and ensuring that they comply with these Standards.

### **2-17.1 GENERAL**

The primary mechanism for review is a Document of Environmental Protection (DEP), which is required for the activities listed in Section 2-17.3.1. Notice and consultation concerning the USAKA activity shall be demonstrated by a DEP. Except for critical mission requirements and emergency situations (Section 2-17.3.7), no new activity or modification of an existing activity that requires a DEP shall be undertaken by USAKA until a DEP is completed in accordance with Section 2-17.3.

### **2-17.2 AGENCY REVIEW AND COMMENT**

All Appropriate Agencies shall have an opportunity to review information on new or modified activities potentially affecting the environment. The agencies may formally comment on these activities to USAKA in an ECR, and if the concerns and recommendations are not addressed by USAKA, the agencies may initiate the procedures for conflict resolution that are discussed in Section 2-19.

### **2-17.3 DOCUMENT OF ENVIRONMENTAL PROTECTION**

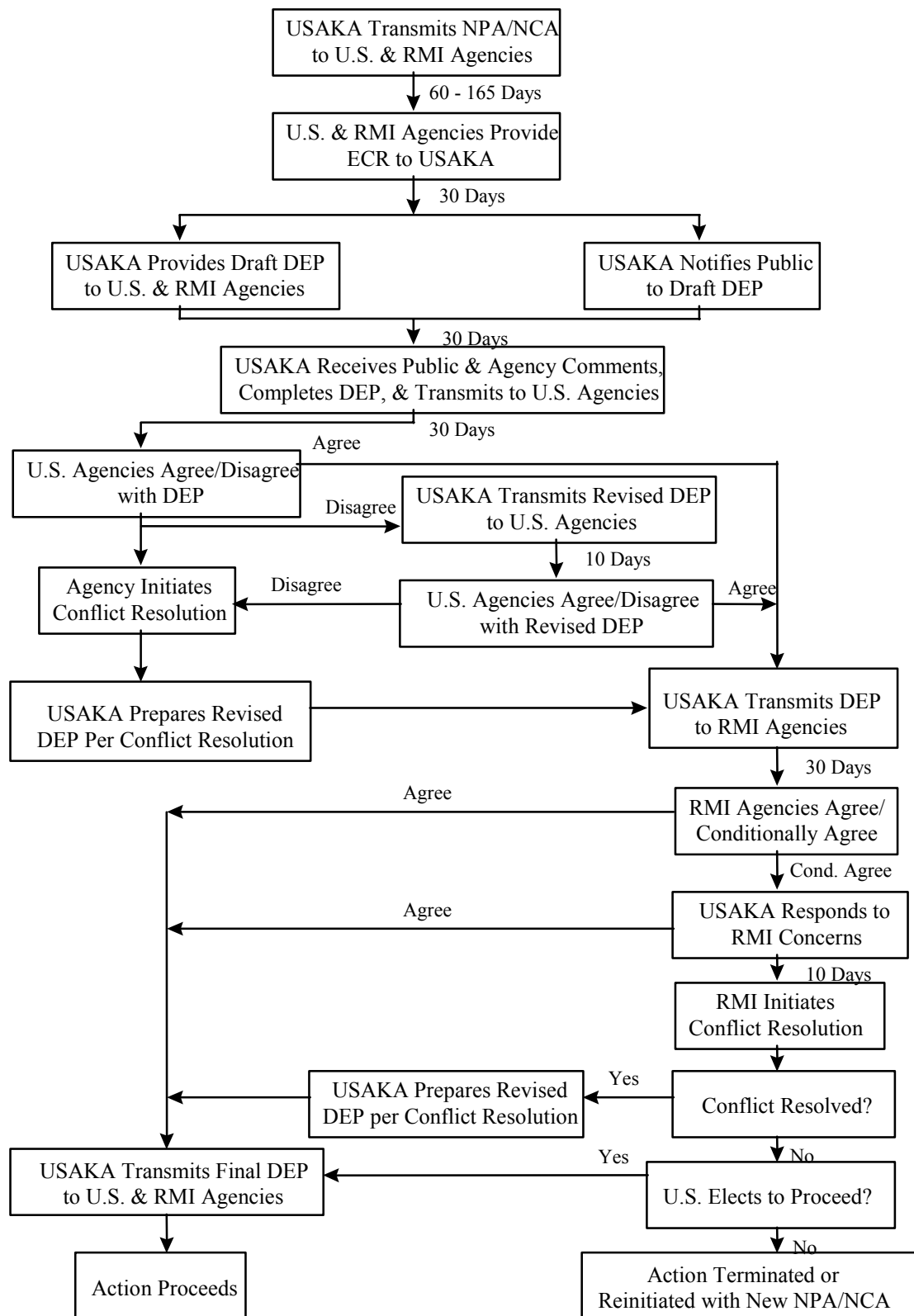
When USAKA proposes an activity that is identified in Section 2-17.3.1, consultation among USAKA and the Appropriate Agencies shall be initiated by USAKA. Figure 2-17.3 presents the procedures associated with processing a Document of Environmental Protection (DEP). The review and comment process shall be documented in a DEP that includes, at a minimum, descriptions of the proposed activity; all changes, if any, to the proposed activity that are made as a result of the review and comment process; special considerations or precautions associated with the proposed activity; all applicable procedures in the Standards for monitoring, reporting, and notification; and reservations and concerns about the proposed activity expressed by the parties to the review.

#### **2-17.3.1 Activities and Findings Requiring a Document of Environmental Protection**

The activities or actions that must be undertaken under the provisions of a final DEP, include the following:

- (a) Construction and operation of a new major stationary source of air pollutants [Section 3-1.5.2(a)(1)] .

**FIGURE 2-17.3**  
**PROCEDURE FOR DOCUMENT OF ENVIRONMENTAL PROTECTION**



- (b) Construction and operation of a source of air pollutants or initiation of an activity that is regulated under 40CFR Parts 61 and 63, unless the source or activity is covered by Appendices 3-1C or 3-1D [Section 3-1.5.2(a)(2)]
- (c) Construction and operation of new source of air pollutants or initiation of an activity that has the potential to emit hazardous air pollutants in excess of the amounts stated in Section 3-1.5.2(a)(3).
- (d) Operation of any existing air pollutant source or activity that meets the criteria stated in (a), (b) or (c) above [Section 3-1.5.3].
- (e) Construction and operation of a new point source of pollutants to waters of the RMI [(Section 3-2.7.1(b))] or continued discharge from any existing point source of pollutants [Section 3-2.7.1(a)].
- (f) Dredging in, quarrying in or from, or discharge of fill or dredged materials to waters of the RMI [Section 3-2.7.2(b)]
- (g) Use of wastewater effluent for reclaimed water purposes and operation of reclaimed water systems [Section 3-2.7.6(e)]
- (h) Discharges of oil associated with research or demonstration projects, or studies on prevention and control [Section 3-2.8.1(d)]
- (i) Construction of a new treatment facility or installation, operation of new or existing potable water treatment processes, significant modification to existing treatment processes for potable water, and use of point-of-entry or point-of-use devices for the purpose of achieving compliance with drinking water standards [Sections 3-3.4.1 and 3-3.6.1]
- (j) Proposed actions or activities for which an adverse biological opinion or a no jeopardy opinion with an incidental take statement has been rendered [Section 3-4.5.3(g)]
- (k) Proposed actions or activities that will have a significant effect on wildlife species or habitats or involve intentional migratory bird takings [Section 3-4.6.3(e)]
- (l) Designation of sites for ocean disposal and disposal of material into the ocean or a lagoon [Sections 3-5.5.1 and 3-5.5.3]
- (m) Ocean disposal of materials at sites designated in accordance with (l) above [Section 3-5.5.3(a)]
- (n) Storage of hazardous waste, including PCBs, for more than 120 days [Section 3-6.5.3(b)(1)]
- (o) Emergency exceptions for pesticide use [Section 3-6.5.4(c)(2)(iii)(A)]

**[2-17.3.1(p)]**

- (p) Treatment or disposal of hazardous waste, including PCBs, [Sections 3-6.1.2(c)(7), 3-6.5.7(a)(1) and (3), 3-6.5.7(b)(1), and 3-6.5.7(b)(4)]
- (q) Destruction or disposal of munitions [Section 3-6.5.7(a)(2)].
- (r) Recycling of hazardous waste or waste petroleum products, unless excluded [Section 3-6.5.7(b)(4)]
- (s) Disposal of non-hazardous solid waste, including landfilling and composting [Section 3-6.5.7(c)(6)(ii)].
- (t) Remediation as specified in Section 3-6.5.8(o).
- (u) Activities that may affect significant cultural resources require a programmatic DEP [Section 3-7.5.2(a)] and may require a specific DEP [Section 3-7.5.2(b)] .

**2-17.3.2 Notice of Proposed Activity**

Before initiating an activity that requires a DEP (Section 2-17.3.1), USAKA shall submit an NPA to all Appropriate Agencies. In some cases submittal of a NPA may satisfy a notification requirement in Section 2-7.2. The NPA prepared by USAKA shall contain sufficient information about the activity for enabling the Appropriate Agencies to evaluate the environmental effects of the activity and determine whether the activity will comply with all applicable standards. If the NPA is incomplete or contains insufficient data for the agencies reviewing the NPA to use in making an informed decision, the Appropriate Agencies shall notify USAKA of this fact and shall ask USAKA to supplement the NPA. USAKA shall respond to a request by furnishing additional data to the Appropriate Agencies, clarifying the content of the furnished information, or notifying the Appropriate Agencies of USAKA's disagreement with the agencies' findings. In addition to any information specifically identified in these Standards, the NPA shall contain the following information as applicable to the activity or action:

- (a) Type of activity.
- (b) Location of activity.
- (c) Technical description of the activity, including the chemical processes used.
- (d) Technical drawing of the activity, including schematics.
- (e) Environmental areas potentially affected by the activity (air, water, hazardous waste, pesticides, cultural resources, etc.).
- (f) Description of the environmental setting of the activity.

- (g) Analysis of the effect of the activity on the environmental area in the absence of environmental controls.
- (h) Technical description and analysis of the environmental controls used in the activity.
- (i) Dispersion model for modeling air sources.
- (j) Analysis of waste discharge for point-source waste discharges to water (Section 3-2.7.1).
- (k) Information required under Sections 3-6.5.3 and 3-6.5.7 for treatment, storage, or disposal facilities.
- (l) Biological assessment [Sections 2-9.2.3 and 3-4.5.2(c)] if endangered resources may be affected.
- (m) Information on receiving-water quality for water discharges.
- (n) Information on marine life, currents, and other characteristics of an ocean disposal site (Sections 3-4 and 3-5).
- (o) Information on marine life and environment in areas where dredging or filling will take place (Sections 3-2, 3-4, and 3-5).
- (p) Species and numbers of migratory birds and other wildlife species and habitats that may be affected (Section 3-4.6.3(c), Appendix 3-4F and Appendix 3-4H).

### **2-17.3.3 Notice of Continuing Activity**

- (a) Unless specified elsewhere in the Standards, DEPs prepared for activities listed in Section 2-17.3.1 shall be reviewed at five-year intervals. An updated NCA shall be submitted 90 days prior to expiration of the existing DEP and the existing DEP shall remain in effect until completion of a new DEP for the activity. To initiate the review, USAKA shall submit a Notice of Continuing Activity (NCA) to the Appropriate Agencies. USAKA shall specify in the NCA whether it intends to continue without significant changes the activity addressed by the DEP and include any changes in the information provided to the Appropriate Agencies in either the NPA or NCA for the DEP being reissued.
- (b) USAKA also shall indicate in the NCA whether it proposes to change the special conditions or precautions or the monitoring, reporting, or notification procedures associated with the activity. The Appropriate Agencies (Section 2-17.3.1) shall furnish comments and recommendations to USAKA for the continuing activity on the time schedules specified in Section 2-17.3.5. The procedures outlined in Section 2-17.3.6 shall apply to the preparation, submittal, and signing of DEPs for continuing activities.

#### **2-17.3.4 Existing Sources and Activities**

All sources and activities existing on the effective date of these Standards that would require a DEP under these Standards may continue to operate without a DEP for one year after the effective date of the Standards. After the one year, for all existing sources and activities that require a DEP, USAKA shall submit an NCA to begin the DEP process. After one year following the effective date of the Standards, the Appropriate Agencies may issue a NOD under Section 2-18.2. In case a deficiency is determined to exist, the source or activity shall be placed on a schedule to bring them into compliance with these Standards.

#### **2-17.3.5 Environmental Comments and Recommendations (ECR)**

When an NPA or NCA has been completed and submitted, the Appropriate Agencies shall review the NPA or NCA. The Appropriate Agencies shall submit any environmental comments and recommendations (ECR) they may have within 90 days of receipt of the NPA or NCA. If an Appropriate Agency has not submitted an ECR within 90 days, USAKA may proceed with processing a draft DEP.

#### **2-17.3.6 Submittal, Approval and Processing of a Document of Environmental Protection**

(a) Within 30 days of receipt of ECRs from the Appropriate Agencies, USAKA shall prepare a draft DEP and submit it to the Appropriate Agencies. Concurrent with the transmittal of the draft DEP to the Appropriate Agencies, USAKA shall notify the public of the planned or continuing activity and the manner in which it is proposed to proceed. USAKA shall notify the public through notices in *The Kwajalein Hourglass* and *The Marshall Islands Journal*. The public and Appropriate Agencies will be provided a 30 day opportunity to comment on the draft DEP. The draft DEP shall indicate whether the comments and recommendations received in the ECRs have been fully addressed, or if not fully addressed, the draft DEP shall document the reasons for not addressing them.

(b) Upon close of the public comment period, USAKA shall transmit to the Appropriate Agencies a DEP which includes a description of any public or agency comments received during the public comment period and the responses by USAKA to the comments.

(c) Within 30 days of receipt of the DEP the appropriate U.S. agencies shall indicate, in writing, to USAKA whether they agree, conditionally agree, or disagree with the DEP. Unless otherwise agreed to with USAKA, failure of an agency to respond within 30 days shall mean the agency agrees with the DEP. If an agency disagrees with all or part of the DEP, it shall state the reasons for the disagreement and provide a suggested means to resolve the disagreement. USAKA may either revise the DEP to resolve any disagreements with appropriate U.S. agencies or initiate conflict resolution proceedings under Section 2-19.2 to resolve the disagreement. If a revised DEP is developed by USAKA based upon review of the DEP by the appropriate U.S. agencies, USAKA shall transmit the revised DEP to the Appropriate Agencies. Within 10 days of receipt, the appropriate U.S. agencies shall indicate, in writing, their agreement or

disagreement with the DEP. Unless otherwise agreed to with USAKA, failure of an agency to respond within 10 days shall mean the agency agrees with the revised DEP. If a disagreement still exists, USAKA may initiate conflict resolution proceedings under Section 2-19.2.

(d) Once all appropriate US agencies agree with the DEP, and/or a DEP is completed pursuant to conflict resolution, it shall be transmitted to the appropriate RMI agencies for their review. Within 30 days of receipt of the DEP, the appropriate RMI agencies shall indicate to USAKA whether they agree or conditionally agree with the DEP. If the appropriate RMI agencies conditionally agree with the DEP, USAKA shall respond to the RMI agencies by indicating if and how the DEP has been revised to resolve the areas of disagreement. Within 10 days of receiving USAKA's response to any areas of disagreement, the appropriate RMI agencies shall indicate to USAKA whether a disagreement still exists and if the RMI intends to notify USAKA pursuant to Section 2-19.3 that conflict resolution proceedings are invoked. Any revisions to the DEP initially transmitted to the appropriate RMI agencies shall be transmitted to the appropriate U.S. agencies.

(e) "Minor" modifications to a completed DEP may be accomplished without going through the process described in sections 2-17.3.6(a)-(d) above, if the Appropriate Agencies and USAKA agree that the modification is minor in nature and does not fundamentally change the environmental impacts or controls associated with the covered activity. To accomplish a minor modification, the proposing agency or USAKA shall describe the modification and why the modification is judged to be minor and transmit this information to the Appropriate Agencies. Agencies shall have 30 days from the date of receipt to respond to the proposing agency indicating agreement or disagreement with the proposed modification as minor modification. No response by an agency within 30 days shall mean the agency does not object to the proposed minor modification. If no agency or USAKA objects or disagrees with the proposed minor modification, the modification shall be deemed to be in effect upon close of the 30 day comment period. If an agency or USAKA objects or disagrees with the proposed minor modification, the modification is not in effect and shall not be considered a minor modification as proposed.

#### **2-17.3.7 Imminent Need to Proceed**

(a) In exceptional situations a need may exist for USAKA to proceed with an activity which would otherwise comply with the Standards prior to completion of a DEP in accordance with Section 2-17.3.6. Such situations are limited to unanticipated activities requiring immediate action to fulfill critical mission requirements and emergency situations. If USAKA believes that the activity would otherwise comply with the Standards, USAKA may seek authorization to proceed without a completed DEP from the Secretary of State or an official designated by the Secretary of State in accordance with Executive Order 12569. USAKA shall notify the Appropriate Agencies and, to the extent practical, consult with and seek the views of the Appropriate Agencies prior to seeking authorization to proceed under this provision. Upon receiving such notification from USAKA, an appropriate U.S. agency may initiate conflict resolution if it believes that the proposed activity will not comply with the substantive provisions of the Standards. If USAKA receives authorization to proceed under this provision, the appropriate RMI agencies may initiate conflict resolution. Notwithstanding the initiation of conflict resolution, USAKA may proceed with the activity. USAKA shall provide the



**[2-17.3.7(b)]**

Appropriate Agencies with: evidence that authorization to proceed has been received; a description of the circumstances requiring immediate action; a description of the action and measures that have/will be taken to mitigate any adverse environmental impacts associated with the action; and a description of why USAKA believes the activity would otherwise comply with the Standards. The information shall be provided no later than 10 days after USAKA has received authorization to proceed.

(b) If USAKA has submitted either a NPA or NCA for the activity proceeding under this provision, the processing of the DEP for the activity shall continue to conclusion as if the activity were a continuing activity.

(c) If the activity proceeding under this provision is a new activity for which an NPA has not been submitted by USAKA, the activity shall be processed as if it were a continuing activity and USAKA shall submit a NCA within 30 days of receiving authorization to proceed.

(d) If the activity proceeding under this provision is the subject of a dispute resolution proceeding between the U.S. Government and the RMI Government (Section 2-19.3), the dispute resolution process shall continue to conclusion taking into consideration the actions taken under this provision.

## **2-17.4 INSPECTIONS**

**2-17.4.1** All Appropriate Agencies may inspect the USAKA facilities, records, or equipment at any time, subject to United States and USAKA security requirements as determined by the Commander, USAKA. USAKA may request technical assistance in the form of an inspection by any appropriate agency.

**2-17.4.2** For routine scheduled inspections, an agency that requests a routine inspection shall notify USAKA and the other Appropriate Agencies of the purpose and schedule for the visit. The inspecting agency will consult with the other Appropriate Agencies to facilitate joint visits whenever possible. Final inspection reports shall be shared with all Appropriate Agencies. USAKA shall be informed of the results of all inspections as soon as possible after the inspection is conducted. To the extent practicable, noncompliance issues shall be brought to the attention of USAKA during the inspection.

**2-17.4.3** USAKA shall correct noncompliance issues immediately if possible. For issues that cannot be corrected immediately, USAKA shall prepare a plan and a schedule for corrective action and shall transmit them to the Appropriate Agencies. USAKA may dispute noncompliance findings through the conflict resolution process outlined in Section 2-19.

## **2-18 OVERSIGHT**

The purpose of the oversight procedures is to encourage continued compliance by USAKA with these Standards.

## **2-18.1 GENERAL**

The Appropriate Agencies may initiate oversight procedures at any time. Oversight procedures can escalate from an informal letter from an appropriate agency to judicial enforcement by the RMI.

## **2-18.2 NOTICE OF DEFICIENCY (NOD)**

The first level of formal oversight involves the issuance by an Appropriate Agency of a NOD. The NOD shall discuss the specific points of noncompliance with the Standards. The NOD shall be furnished to the Commander, USAKA, with a copy furnished to the Deputy Commanding General, USASMDC. Any Appropriate Agency may issue a NOD for a violation of these Standards except when the violation is discovered through a USAKA internal auditing report [Section 2-16.2.1(c)(2)] and USAKA has responded to the satisfaction of the Appropriate Agencies [Section 2-16.2.1(c)(3)]. The NOD shall be issued in writing, and copies shall be sent to all Appropriate Agencies. The NOD shall specifically identify the environmental condition that the Appropriate Agency believes is out of compliance and the standard that applies. If possible, the NOD shall present suggested methods for correction.

## **2-18.3 RESOLUTION OF A NOD**

USAKA shall respond in writing to the NOD within 30 days of receiving it. USAKA shall state its position on the NOD and shall state whether it will take corrective action. Copies of the response shall be provided to the Appropriate Agencies. If USAKA and the agency issuing the NOD mutually agree that a violation has not occurred, the matter is resolved and the other Appropriate Agencies will be advised of the resolution. If USAKA and the issuing agency cannot agree that a violation has occurred, either USAKA or the issuing agency may initiate the conflict resolution procedures in Section 2-19 to resolve the dispute. If USAKA and the issuing agency agree that a violation has or is occurring or the results of a conflict resolution proceeding confirm that a violation has or is occurring, USAKA shall consult with the issuing agency and transmit a Letter of Commitment (LOC) to the Appropriate Agencies within 10 days of agreement or confirmation that the violation has or is occurring. The LOC shall describe the actions and schedule of actions USAKA will undertake to resolve the violation. Subject to the availability of funds or as mutually agreed between USAKA and the issuing agency or as determined through conflict resolution, the LOC shall contain a schedule to correct the violation within 60 days or prevent violations of the same nature from re-occurring.

## **2-19 CONFLICT RESOLUTION**

The purpose of conflict resolution is to provide administrative procedures to resolve disputes between two or more parties. Dispute resolution does not replace less formal resolution of issues amongst the working-level personnel of the involved parties, rather it provides a means to resolve disputes that cannot be resolved through less formal consultations.

## **2-19.1 GENERAL**

**[2-19.1(a)]**

(a) Two types of disputes may arise under these Standards: disputes between two or more U.S. agencies; or disputes between the U.S. Government and the RMI Government. For each category of dispute, procedures are defined to seek resolution of the dispute at the lowest level possible and in the most timely manner possible. Except as provided in Section 2-17.3.7, once conflict resolution procedures are initiated USAKA shall maintain the status quo with respect to the subject of the dispute. Figure 2-19.1 diagrams the procedures for conflict resolution.

(b) To inform USAKA and the appropriate U.S. agencies of its position in a matter between and among U.S. government agencies, the RMI Government may at any time issue an Environmental Opinion. The Environmental Opinion shall set out the RMI's position on the matter and the corrective action and schedule desired by the RMI.

**2-19.2 DISPUTES BETWEEN AND AMONG U.S. GOVERNMENT AGENCIES**

Dispute resolution procedures are initiated when a U.S. agency notifies another U.S. agency(s) that a dispute exists and conflict resolution procedures are invoked. The notification must include a description of the nature and basis of the dispute and a description of the attempts that have been made to informally resolve the dispute. Copies of any such notification must be provided to all Appropriate Agencies by the party initiating conflict resolution procedures.

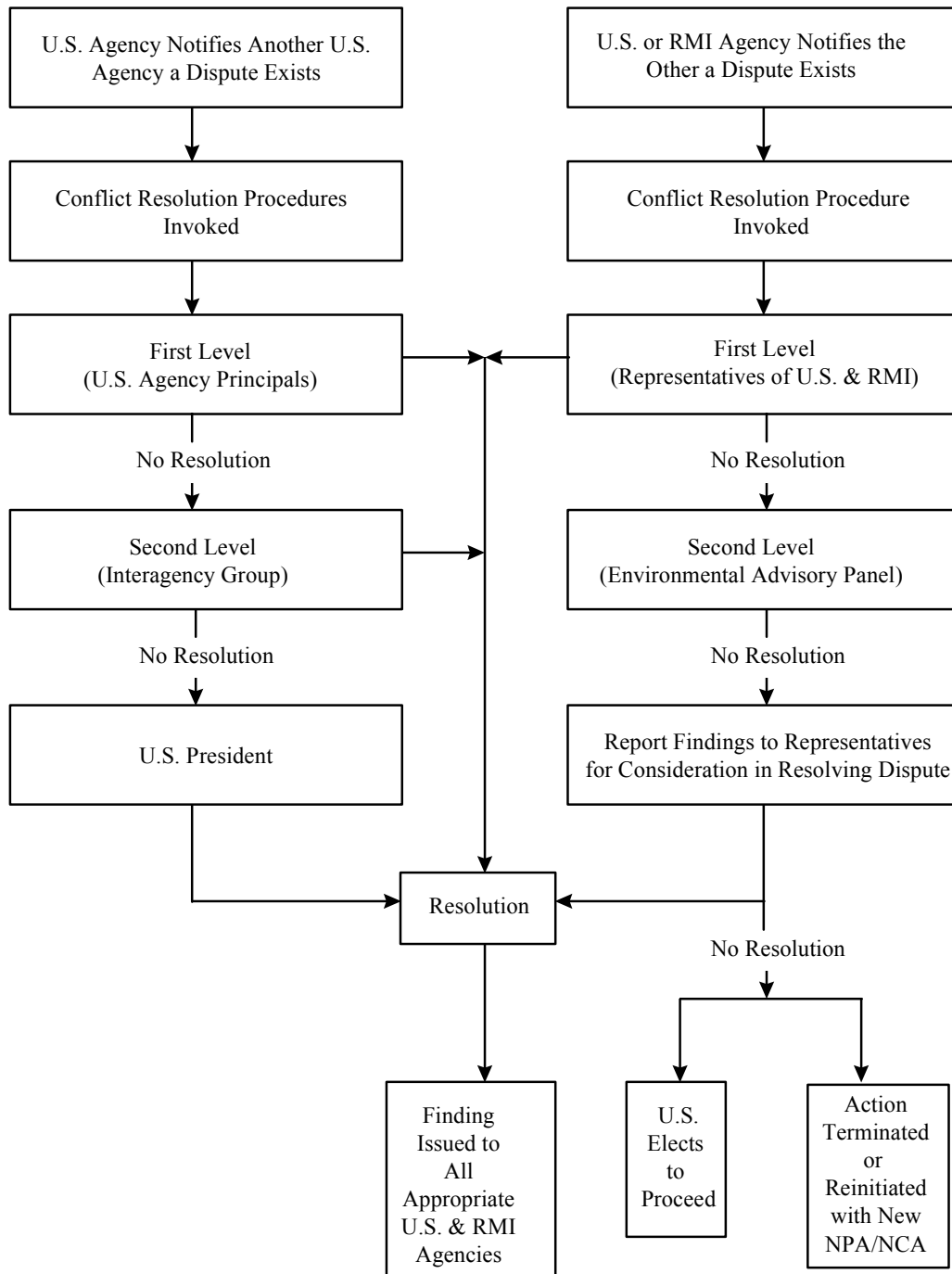
**2-19.2.1 First Level**

The initial phase of formal conflict resolution involves principals of the U.S. agencies. Principals are defined here as the Deputy Commanding General, USASMDC; Regional Administrator of USEPA Region 9; Regional Director of USFWS, Pacific Region; Director of the Southwest Region, USNMFS; Commander, USAEDPO; and representatives of other agencies as may be appropriate to the dispute. If the principals resolve the dispute, a finding will be issued to all appropriate U.S. and RMI agencies. The finding will describe the nature of the resolution and any actions required by parties to the dispute. If, after 30 days, the principals cannot arrive at a resolution of the dispute, the party initiating the dispute may raise the dispute to the final level of resolution by notifying all Appropriate Agencies that a dispute still exists. If the party initiating the dispute does not raise the dispute to the final level within 60 days of transmitting the notification described in Section 2-19.2, the disputed matter may proceed as if there were no dispute.

**2-19.2.2 Second Level**

Should a dispute still exist after the first level of resolution the dispute will be submitted to the Interagency Group for Freely Associated State Affairs (IAG) established by Executive Order 12569 for consideration. If the IAG arrives at a solution, its advisory opinion will be issued to all Appropriate Agencies and USAKA within 60 days of referral. The opinion will describe the nature of the solution and any recommended actions required by parties to the dispute. If a party to the dispute does not agree with the recommended solution of the IAG, or the IAG has not arrived at a solution within 60 days of referral, the matter may be referred to the President through the Assistant to the President for National Security Affairs.

**FIGURE 2-19.1  
PROCEDURE FOR CONFLICT RESOLUTION**



### **2-19.3 DISPUTES INVOLVING THE RMI AS A PARTY**

Dispute resolution procedures are initiated when either an RMI agency or an appropriate U.S. agency or USAKA notifies the other that a dispute exists and conflict resolution procedures are invoked. The notification will include a description of the nature and basis of the dispute and a description of the efforts that have been made to informally resolve the dispute.

#### **2-19.3.1 First Level**

The initial phase of formal conflict resolution involves representatives of the U.S. and RMI. Representatives of each government will be selected by the RMI Minister of Foreign Affairs and the U.S. ambassador to the RMI. If the representatives resolve the dispute, a finding will be issued to all Appropriate Agencies. The finding will describe the nature of the resolution and any actions required by parties to the dispute. If, after 30 days, the representatives cannot arrive at a resolution of the dispute, either representative may refer the dispute to an Environmental Advisory Panel (Section 2-19.3.2) by notifying the other representative that a dispute still exists.

#### **2-19.3.2 Second Level - Environmental Advisory Panel (EAP)**

Once a dispute is referred, an EAP will be convened consisting of members selected by the representatives of each government. The EAP will have three members, one selected by the RMI representative, one selected by the U.S. representative and a third member selected by mutual agreement of the Governments. Unless mutually agreed otherwise, the Governments shall share equally the costs of the EAP. The EAP shall within 60 days of receiving the matter for consideration report its findings to the representatives for their consideration in resolving the dispute. If the dispute is not resolved within 30 days of the EAP report, the dispute shall be considered unresolved.

#### **2-19.3.3 No Resolution**

If the dispute is not resolved at the completion of the second level of conflict resolution, the U.S. may elect to proceed or not proceed without prejudice to any other rights of the U.S. or RMI under the Compact. The U.S. shall notify the RMI of its decision.

### **2-19.4 RIGHTS UNDER THE COMPACT**

Nothing in these Standards shall be construed to abridge or otherwise modify the rights of the RMI Government and the U.S. Government granted by Section 162 of the Compact.

### **2-20 (Reserved)**

## **2-21 TECHNICAL SUPPORT**

**2-21.1** USAKA shall have the capability to obtain technical support for complying with these Standards. The Appropriate Agencies (Section 2-6.1) may furnish assistance to USAKA for conducting the surveys and investigations necessary for determining the effects of USAKA activities on environmental resources. The Appropriate Agencies may request technical assistance from USAKA in analyzing whether a standard is being met. The technical assistance may consist of sampling, analysis, modeling, and audits by independent agencies. The funds required to support investigations that result in reports or to conduct monitoring or follow-up studies may be transferred to the Appropriate Agencies in accordance with statutes and regulations. The cost of planning, constructing, operating, and maintaining project features necessary for appropriate conservation of fish and wildlife shall be borne by the proponent of the activity as a cost of the project.

**2-21.2** The technical assistance to RMIEPA may further consist of provision of environmental teaching materials, provision of exchange opportunities for Ebeye students in formal and non-formal environmental studies, and support for cataloguing flora and fauna native to Kwajalein Atoll.

## **2-22 EFFECTIVE DATE AND PERIODIC REVIEW OF STANDARDS**

### **2-22.1 Effective Date**

These Standards became effective on December 4, 1995 upon concurrence by the RMI.

### **2-22.2 Periodic Reviews**

Beginning one year from the effective date of the Standards and every year thereafter until deemed no longer necessary by the Project Team (Section 2-6.3), the Project Team shall review the standards and procedures to ensure that they are current, accurate, and complete and that they continue to be appropriate. The adequacy of implementation also shall be reviewed. During the reviews, standards that are more stringent, less stringent, new, or additional shall be considered. All revisions adopted by the U.S. and RMI as a result of periodic reviews shall be effective upon approval, unless otherwise specified. All revisions to a U.S. health-based regulation from which a USAKA standard is derived and all additions to the U.S. or RMI threatened or endangered species list that have a direct effect on the standards specifically included in the Standards shall become applicable to USAKA immediately on the effective date of such revision or addition, unless otherwise determined to be inappropriate under these procedures for periodic reviews. The agency within the United States with oversight responsibility over the health-based regulation shall immediately notify USASMDC and the Appropriate Agencies of any revision to a health-based standard. The applicable health-based standards listed in Table 2-22.1 and such other standards Appropriate Agencies agree should be considered health-based are subject to the provisions of this section.

### **2-22.3 Special Reviews**

Reviews of these Standards may be conducted more frequently than annually to consider new scientific information that indicates the need for revisions or to consider other issues deemed significant enough to warrant special review by a member of the Project Team.

### **2-22.4 Annual Consultations**

**2-22.4.1** In addition to annual or special reviews, representatives of USAKA and RMIEPA/Ebeye shall meet annually, or more frequently at the request of either party, to consider Standards or environmental issues of mutual concern.

**2-22.4.2** Representatives of the Project Team shall hold public information meetings on Majuro and Ebeye following each annual review of the Standards and preceding RMI consideration of changes, revisions, additions, and deletions to the Standards for the purpose of educating the RMI public in regard to the Standards.

### **2-22.5 Approval of Revisions**

All recommendations for changes, revisions, additions, and deletions shall be submitted to the governments of the United States and the RMI for approval.

## **2-23 SEVERABILITY**

If any provision of the Standards is invalidated by a U.S. federal court of competent jurisdiction, such invalidation shall not affect the implementation of any other provision of the Standards that are not affected by the invalidation.

## **2-24 FUNDING**

**2-24.1** USASMDC, the DA, and the Department of Defense (DOD) shall request sufficient funding to ensure that USAKA can support the level of effort required to implement and uphold these Standards and shall ensure that the funding request is separately identified for that purpose.

**2-24.2** RMIEPA might not have sufficient resources for supporting these Standards. Within the second quarter of each fiscal year, USASMDC or USAKA and RMIEPA shall meet to discuss and reach agreement on the level and duration of USAKA funding of financial support for RMIEPA. Such agreement will depend upon the availability of appropriated funds and on the financial resources allocated to USASMDC by DOD and will be consistent with existing laws and regulations.

## **2-25 EXEMPTIONS**

USAKA may be exempted from any standard or procedure contained in these Standards through the provisions of Section 161(e) of the Compact.

## **2-26 RELINQUISHMENT OF DEFENSE SITE**

In the event of United States relinquishment of its defense site on Kwajalein Atoll, including those areas within the mid-atoll corridor and the eleven islands within the atoll controlled totally or in part by the United States, which are Kwajalein, Roi-Namur, Ennugarret, Ennylabegan, Meck, Eniwetak, Omelek, Gellinam, Gagan, Illeginni, and Legan, or relinquishment of any part thereof, USAKA shall, no later than seven years prior to the relinquishment, establish a task force to conduct an environmental baseline survey, to be finalized no later than four years prior to relinquishment. The purpose of the survey is to identify sites that require consideration under Standards Section 3-6.5.8. The task force shall have membership as if it were an Environmental Advisory Panel pursuant to Standards Section 2-19.3.2.



<b>TABLE 2-22.1</b> <b>USAKA HEALTH-BASED STANDARDS</b>			
<b>Applicable Standard</b>			
<b>Environmental Category</b>	<b>Section</b>	<b>Table</b>	<b>Appendix</b>
Air Quality	3-1.6.1 Ambient Air Quality Standards (Criteria Pollutants)	N/A	
Water Quality and Reef Protection	3-2.7.6 Reclaimed Water	Standards for microbiological contaminants in Table 3-2.C.1 of Appendix 3-2C	3-2J Reclaimed Water Standards  3-2K Reclaimed Water - Chemical Compound Monitoring List
Drinking Water Quality	3-3.5.1 Inorganic Contaminants  3-3.5.2.1 Maximum Contaminant Levels  3-3.5.3.1 Maximum Contaminant Levels and Maximum Residual Disinfectant Levels  3-3.5.4 Turbidity Requirements  3-3.5.5 Microbiological Contaminants  3-3.5.6 Radium-226, Radium-228, Uranium, Gross Alpha Particle Radioactivity, Beta Particle Radioactivity and Photon Radioactivity from Man-Made Radionuclides	3-3.5.1 MCLs/Action Levels for Inorganic Contaminants  3-3.5.2.1 MCLs for Organic Contaminants  3-3.5.3.1 MCLs/MRDLS for Disinfectant and Disinfection Byproducts  3-3.5.6.1 Average Annual Concentrations Assumed to Produce a Total Body or Organ Dose of 4 Millirems Per Year  3-3.5.6.2A Detection Limits for Gross Alpha Particle Activity, Radium 226, Radium 228 and Uranium	N/A

TABLE 2-22.1 USAKA HEALTH-BASED STANDARDS			
Environmental Category	Applicable Standard		
	Section	Table	Appendix
Drinking Water Quality (Continued)		3-3.5.6.2B Detection Limits for Man-Made Beta Particle and Photon Emitters	
	3-3.6.1 Use of Non-centralized Treatment Devices		
	3-3.6.2 Filtration and Disinfection Treatment Techniques		
	3-3.6.2.2 Disinfection Profiling and Benchmarking Requirements		
	3-3.6.3 Treatment Technique for Control of Disinfection Byproduct Precursors	3-3.6.2.3 Required TOC Percent Removal Requirements	
	3-3.6.4 Identification of Best Technology, Treatment Techniques, or Other Methods Generally Available for Organic and Inorganic Chemicals, and Radionuclides	3-3.6.4.1 Best Available Technology for Organic Chemicals	
		3-3.6.4.2 Best Available Technology for Inorganic Chemicals	
		3-3.6.4.3 Best Technology, Treatment Techniques, or Other Methods Generally Available for Disinfection Byproducts	
		3-3.6.4.5 Best Available Technology for Radionuclides	
	3-3.7.1 Maximum Contaminant Level Goals for Organic Contaminants	3-3.7.1 Maximum Contaminant Level Goals for Organic Contaminants	

TABLE 2-22.1 USAKA HEALTH-BASED STANDARDS			
Environmental Category	Applicable Standard		
	Section	Table	Appendix
Drinking Water Quality (Continued)	3-3.7.2 Maximum Contaminant Level Goals for Microbiological Contaminants	3-3.7.2 Maximum Contaminant Level Goals for Microbiological Contaminants	
	3-3.7.3 Maximum Desirable Contaminant Levels Affecting Drinking Water Aesthetics	3-3.7.3 Maximum Desirable Contaminant Levels for Drinking Water Aesthetics	
	3-3.7.4 Maximum Contaminant Level Goals for Disinfection Byproducts	3-3.7.4 Maximum Contaminant Level Goals for Disinfection Byproducts	
	3.3.8.1 Public Notifications	3.3.8.1 Violations of Drinking Water Regulations Requiring Public Notice	
	3-3.9.1 Prohibition on Use of Lead Pipes, Solder, and Flux		
Material and Waste Management		3-6B.1 Maximum Concentration of Contaminants for Toxicity Characteristic	3-6B Characteristics of Hazardous Wastes and Lists of Hazardous Wastes
		3-6B.2(b)* Listed Hazardous Wastes From Nonspecific Sources	
		3-6B.2(c)(5)* Acutely Hazardous Wastes	
		3-6B.2(c)(6)* Toxic Wastes	
		3-6C* Hazardous Materials	3-6C* Hazardous Materials List
	3-6.5.7(d) Sewage Sludge and Septage Use and Disposal	3-6.5.7(d) Pollutant Concentrations	
*The contaminants listed in these tables and appendices are subject to the exclusion limits for acutely hazardous waste. If a contaminant is added to the U.S. regulations on which these tables and appendices are based, it will be subject to the requirements of Section 2-22 for health-based standards.			
MCL: Maximum Contaminant Level MCLG: Maximum Contaminant Level Goal N/A: Not applicable			

## **PART 3 STANDARDS**

### **3-1 AIR QUALITY**

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#### **3-1.2 DERIVATION**

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#### **3-1.11 SPECIAL REQUIREMENTS**

##### **3-1.11.1 Air Toxics Reporting and Control**

[3-1]

**3-1.11.2 Ozone-Depleting Substances**

**3-1.11.3 Inventory of Stationary Source Emissions**

## **3-1 AIR QUALITY**

### **3-1.1 INTRODUCTION**

This section establishes the standards and procedures that are applicable to activities of the U.S. Government at USAKA that affect air quality. The primary objective of the standards for air quality is to maintain the current air quality at USAKA. In addition to the specific procedural references in this section, the standards for air quality shall incorporate all applicable procedures that are in Part 2. The health-based standards in this section that are subject to the provisions of Section 2-22 are in Section 3-1.6.1 and in Appendix 3-1C.

### **3-1.2 DERIVATION**

Section 3-1 of the Standards is derived from the applicable sections of 40 CFR 50 through 87, which establish regulations for air quality according to the requirements of the Clean Air Act (CAA).

### **3-1.3 SUMMARY OF CHANGES**

The air quality standards and procedures accomplish the fundamental purposes of the CAA but do not necessarily incorporate many of the procedural or mandatory technology-based requirements established under the CAA. The air quality standards are designed to maintain the current air quality at USAKA. Ambient air concentrations for criteria pollutants are not allowed to be increased above the level predicted to exist on the effective date of these Standards by more than an increment of 25 percent of the U.S. National Ambient Air Quality Standard for the criteria pollutant. In no case shall ambient air quality concentrations for a criteria pollutant be allowed to exceed 80 percent of any U.S. National Ambient Air Quality Standard. In general, the Standards gauge effectiveness and acceptance in terms of ambient air quality effects rather than through application of technology-based controls. All significant stationary sources of criteria pollutants, hazardous air pollutants and activities covered by a U.S. National Emission Standard for Hazardous Air Pollutants (NESHAPS) must be governed by a Document of Environmental Protection (DEP), which is subject to review and agreement by U.S. and RMI agencies as well as public review. NESHAPS categories that are likely to occur at USAKA are presented in appendices 3-1C and 3-1D, and all other activities that would be subject to a U.S. NESHAPS in the U.S. are subject to DEP requirements [Section 3-1.5.2(a)(2)]. General provisions are included for maintaining inventories of emission sources, reporting, eliminating or reducing the use of chemicals associated with hazardous air pollutants, and eliminating or reducing the use of ozone-depleting substances.

### **3-1.4 PLANS**

(Reserved)

### **3-1.5 PERFORMANCE STANDARDS**

USAKA personnel who operate, maintain, or manage equipment or processes that use emission-control devices for maintaining air quality must demonstrate the level of knowledge required for performing their tasks safely and in a way that preserves the environment, as cited in Section 2-10.

#### **3-1.5.1 Protection of Ambient Air Quality**

No activity, alone or in combination with other activities, shall cause:

- (a) An increase in ambient air concentration above the established baseline level for a criteria pollutant by more than the incremental amounts given in Table 3-1.6.1.
- (b) The ambient air concentration of a criteria pollutant to exceed the ambient air quality standards in Table 3-1.6.1, or
- (c) Violation of a standard adopted by reference under Section 2-22.

#### **3-1.5.2 New Sources**

- (a) Document of Environmental Protection

USAKA shall submit a NPA as required by Sections 2-17.3.1(a) through (c) and 2-17.3.2 before the start of construction of a new stationary source or the start of a new activity that:

- (1) Is a major stationary source (Table 3-1.5.2), or
- (2) Is covered by NESHAPS listed at 40 CFR 61 and 63, unless otherwise covered by Appendix 3-1C or Appendix 3-1D, or
- (3) Has the potential for emitting 10 tons per year of any one of the substances in Appendix 3-1A, or any combination of the substances in Appendix 3-1A in excess of 25 tons per year.

**TABLE 3-1.5.2  
POLLUTANT THRESHOLDS FOR  
MAJOR STATIONARY SOURCES**

<b>Parameter</b>	<b>Potential to Emit</b>
carbon monoxide	100 tons per year (tpy)
nitrogen oxides	40 tpy
sulfur dioxide	40 tpy
ozone	40 tpy of VOC
lead	0.6 tpy
particulate matter	25 tpy of particulate matter emissions 15 tpy of PM <sub>10</sub> emissions
asbestos	0.007 tpy
beryllium	0.0004 tpy
mercury	0.1 tpy
Municipal waste combustor organics (measured as total tetra-through octachlorinated dibenzo-p-dioxins and dibenzofurans)	$3.5 \times 10^{-6}$ tpy
Municipal waste combustor metals (measured as particulate matter)	15 tpy
Municipal waste combustor acid gases (measured as sulfur dioxide and hydrogen chloride)	40 tpy
Municipal solid waste landfill emissions (measured as non-methane organic compounds)	50 tpy
vinyl chloride	1 tpy
fluorides	3 tpy
sulfuric acid mist	7 tpy
hydrogen sulfide (H <sub>2</sub> S)	10 tpy
total reduced sulfur (including H <sub>2</sub> S)	10 tpy
reduced sulfur compounds (including H <sub>2</sub> S)	10 tpy
[40 CFR 52.21(b)(23)(i)]	

(b) In addition to the data required by Section 2-17.3.2, each NPA shall include at least the following information:

- (1) A description of the source.
- (2) A description of all emission controls that will be operated for the source.



**[3-1.6.1(f)]**

(3) An estimate of maximum potential and projected actual emissions for all substances regulated under Section 3-1.5.2 and the requested allowable emissions for such substances.

(4) An air quality impact analysis that includes:

(i) An assessment based on modeling or monitoring of existing ambient air quality.

(ii) The predicted change in the ambient air quality resulting from the operation of the new source and all changes caused by the new source to all other sources, including those subject to documentation in a DEP (Section 2-17.3) and existing and planned minor sources.

(iii) As applicable, an assessment based on modeling and prediction of conformance to the requirements of Appendix 3-1B or Appendix 3-1C; the requirements of NESHAPS listed in 40 CFR 61 and 63, unless otherwise covered by Appendix 3-1B or Appendix 3-1C; or all new air toxic rules adopted in compliance with Section 2-22.

(iv) An assessment and a prediction of all anticipated effects on vegetation, soil, water, and visibility.

(v) A comparison of the predicted ambient air quality and the performance standards in Section 3-1.5.1.

(5) Predictions in Section 3-1.5.2(b)(4) shall conform to the following:

(i) The prediction methods that are used for ambient air quality shall be described in the NPA and consistent with USEPA modeling guidelines.

(ii) The predictions shall be based on the allowable emissions in any DEPs for existing sources, proposed allowable emissions in any NCAs or NPAs, and the proposed allowable emissions for the new or modified source.

(6) A schedule of construction.

(7) A description of any proposed emissions, ambient air quality, or operational monitoring associated with the source.

(c) Minimum operating conditions.

Before construction begins, USAKA shall document in an NPA, on the basis of the prediction methods in Section 3-1.5.2(b)(4) and other relevant information, that the following conditions will be met:

(1) The operation of the source will not result in exceeding any performance standard presented in Section 3-1.5.1

(2) Compliance will be achieved with all applicable health-based standards or rules adopted under the provisions of Section 2-22.

### **3-1.5.3 Existing Sources**

For all stationary sources operating at USAKA that meet the criteria stated in Section 3-1.5.2(a) on the effective date of these Standards, USAKA shall submit an NCA to the Appropriate Agencies within 1 year of the effective date. At a minimum, the NCA shall contain the information described in Section 3-1.5.2(b)(1) through (7). The minimum operating conditions presented in Section 3-1.5.2(c) shall apply to all NPAs and NCAs for existing sources.

### **3-1.5.4 Modification of Sources**

All planned modifications of stationary sources operating under a DEP shall require submittal of an NPA and development of a new DEP if such modifications, either singly or in combination with other modifications, cause an increase by more than 5 percent of the allowable emission level for any pollutant in the DEP for that source or result in emissions of pollutants not covered in the DEP that meet the criteria in Section 3-1.5.2(a). The NPA shall include the information required in Section 3-1.5.2(b) and document that the modified source will meet the minimum operating conditions stated in Section 3-1.5.2(c).

### **3-1.5.5 Motor Vehicles**

All motor vehicles imported for use on USAKA shall meet the minimum national requirements specified for motor vehicles in the United States. In addition, no person may tamper with or otherwise modify emission-control equipment on motor vehicles operating or intended for operation on USAKA.

## **3-1.6 DISCHARGE LIMITS, EMISSION STANDARDS, POLLUTION CONTROL**

### **3-1.6.1 Ambient Air Quality Standards (Criteria Pollutants)**

#### **(a) Sulfur Oxides**

The ambient air quality standard for sulfur oxides measured as sulfur dioxide by the method described in Appendix A of 40 CFR 50 is:

[3-1.6.1(f)]

(1) 80 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) (0.030 parts per million (ppm), rounded to three decimal places), annual arithmetic average not to be exceeded in a calendar year. [Reference 40 CFR 50.4 and 40 CFR 50.5]

(2)  $365 \mu\text{g}/\text{m}^3$  (0.14 ppm, rounded to two decimal places), maximum 24-hour concentration not to be exceeded more than once per year [Reference 40 CFR 50.4 and 40 CFR 50.5]

(3)  $1300 \mu\text{g}/\text{m}^3$  (0.5 ppm, rounded to one decimal place), maximum 3-hour concentration not to be exceeded more than once per year [Reference 40 CFR 50.4 and 40 CFR 50.5].

(b) Carbon Monoxide

The ambient air quality standard for carbon monoxide as measured by a reference method based on Appendix C of 40 CFR 50 is:

(1) 10 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) (9 ppm) for an 8-hour average concentration not to be exceeded more than once per year [Reference 40 CFR 50.8]

(2)  $40 \text{ mg}/\text{m}^3$  (35 ppm) for a 1-hour average concentration not to be exceeded more than once per year. Averages shall be computed as follows:

(i) An 8-hour average shall be considered valid if at least 75 percent of the hourly averages for the 8-hour period are available. If averages of only 6 or 7 hours are available, the 8-hour average shall be computed on the basis of the hours available, using 6 or 7 as the divisor.

(ii) In summaries of data to be used for comparison with the standards, averages shall be stated to one decimal place. Comparison of the data with the levels of the standards in parts per million (ppm) shall be made in integers, and fractional parts of 0.5 or greater shall be rounded up [Reference 40 CFR 50.8].

(c) Particulate Matter

(1) The ambient air quality standards for particulate matter measured as particles having an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ( $\text{PM}_{2.5}$ ) in accordance with the reference methods described in Appendices L and N of 40 CFR 50 are:

(i)  $15.0 \mu\text{g}/\text{m}^3$ , annual arithmetic average concentration not to be exceeded in a calendar year.

The annual  $PM_{2.5}$  standards are attained when the annual arithmetic mean concentration is less than or equal to 15.0 micrograms per cubic meter.

- (ii)  $65 \mu\text{g}/\text{m}^3$  for a 24-hour average concentration.

The 24-hour  $PM_{2.5}$  standards are attained when the 98th percentile 24-hour concentration is less than or equal to 65 micrograms per cubic meter.

(iii) Implementation measures for the ambient air quality standards for  $PM_{2.5}$  will be considered during the periodic reviews (Section 2-22.1) and incorporated into the Standards as appropriate.

(2) The ambient air quality standards for particulate matter measured as particles having an aerodynamic diameter less than or equal to a nominal 10 micrometers ( $PM_{10}$ ) in accordance with the reference methods described in appendices M and N of 40 CFR 50 are:

- (i)  $50 \mu\text{g}/\text{m}^3$ , annual arithmetic average concentration not to be exceeded in a calendar year.

The annual  $PM_{10}$  standards are attained when the annual arithmetic mean concentration is less than or equal to  $50 \mu\text{g}/\text{m}^3$ .

- (ii)  $150 \mu\text{g}/\text{m}^3$  for a 24-hour average concentration

The 24-hour  $PM_{10}$  standards are attained when the 99th percentile 24-hour concentration is less than or equal to  $150 \mu\text{g}/\text{m}^3$ . [Reference 40 CFR 50.6 and 40 CFR 50.7]

(d) Ozone

(1) The 8-hour ambient air quality standard for ozone as measured in accordance with the reference methods described in Appendices D and I of 40 CFR 50 is  $160 \mu\text{g}/\text{m}^3$  (0.08 ppm), which is a daily maximum 8-hour average.

(2) The 8-hour standard is met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to  $160 \mu\text{g}/\text{m}^3$  (0.08 ppm). [Reference 40 CFR 50.10]

[3-1.6.1(f)]

(e) Nitrogen Dioxide

The ambient air quality standard for nitrogen dioxide measured by the reference method described in Appendix F of 40 CFR 50 is an annual arithmetic average concentration of 0.053 ppm ( $100 \mu\text{g}/\text{m}^3$ ). The standard is attained when the annual arithmetic mean concentration in a calendar year is less than or equal to 0.053 ppm, rounded to three decimal places (fractional parts equal to or greater than 0.0005 ppm must be rounded up). For demonstrating attainment, an annual mean must be based on hourly data that are at least 75 percent complete or on data derived from manual methods that are at least 75 percent complete for the scheduled sampling days in each calendar quarter. [Reference 40 CFR 50.11]

(f) Lead

The ambient air quality standard for lead and its compounds measured as elemental lead in accordance with the reference method described in Appendix G of 40 CFR 50 is  $1.5 \mu\text{g}/\text{m}^3$ , maximum arithmetic mean averaged over a calendar quarter. [Reference 40 CFR 50.12]

<b>TABLE 3-1.6.1</b> <b>AMBIENT AIR QUALITY STANDARDS (CRITERIA POLLUTANTS)</b>			
Pollutant	Averaging Period	USAKA Ambient Standard * ( $\mu\text{g}/\text{m}^3$ )	USAKA Increment ( $\mu\text{g}/\text{m}^3$ )**
Particulate Matter <sup>1</sup> (PM <sub>10</sub> )	24 - hour Annual	120 40	37.5 12.5
Particulate Matter <sup>2</sup> (PM <sub>2.5</sub> )	24 - hour Annual	52 12	16.3 3.8
Sulfur Oxides <sup>3</sup> (SO <sub>x</sub> )	3 – hour 24 – hour Annual	1,040 292 64	325 91 20
Nitrogen Dioxide <sup>4</sup> (NO <sub>2</sub> )	Annual	80	25
Carbon Monoxide <sup>5</sup> (CO)	1 – hour 8 – hour	32,000 8,000	10,000 2,500
Ozone <sup>6</sup> (O <sub>3</sub> )	8 – hour	128	40
Lead <sup>7</sup> (Pb)	3 months	1.2	0.375

- \* Values reflect 80% of U.S. National Ambient Air Quality Standards
- \*\* Values reflect 25% of U.S. National Ambient Air Quality Standards

1. Reference 40 CFR 50.6
2. Reference 40 CFR 50.7
3. Reference 40 CFR 50.4, 50.5
4. Reference 40 CFR 50.11
5. Reference 40 CFR 50.8
6. Reference 40 CFR 50.10
7. Reference 40 CFR 50.12

### **3-1.7 PROHIBITIONS**

#### **3-1.7.1 Open Burning**

Open burning of solid waste or other substances as a means of disposal or volume reduction is prohibited, except that:

- (a) The Commander, USAKA may authorize in writing, the infrequent open-burning of land-clearing debris or other non-hazardous debris from emergency cleanup operations. The Commander, USAKA shall notify all Appropriate Agencies of this emergency authorization within 30 days in accordance with Section 2-7.2.1(c)
- (b) The Commander, USAKA may authorize the open burning of non-putrescible, non-hazardous, solid wastes (e.g. scrap wood, cardboard) for fire-fighting practice, provided the Commander, USAKA provides no less than 30 days advance notification of each event to the Appropriate Agencies of any such authorization, in accordance with Section 2-7.2.1(c)
- (c) Open-burning of liquid wastes for fire-fighting training is prohibited.

#### **3-1.7.2 Ozone-Depleting Chemicals**

Intentional venting for disposing of ozone-depleting chemicals to the atmosphere is prohibited at USAKA [Section 3-1.11.2(c)]. USAKA shall not offer any ozone-depleting substances for sale or distribution outside USAKA but within the RMI without written authorization from the RMIEPA [Section 3-1.11.2(d)].

#### **3-1.7.3 Protection of Ambient Air Quality**

USAKA shall not undertake any activity that results in a violation of the ambient air quality standards or allowable incremental increases given in Table 3-1.6.1.

[3-1.7.4]

### **3-1.7.4 Emission of Air Pollutants**

Except as authorized in a DEP, USAKA shall not construct or operate a stationary source of air pollutants, or undertake an activity that meets the criteria given in Section 3-1.5.2.

### **3-1.7.5 Motor Vehicles**

USAKA shall not tamper with or otherwise modify emission-control equipment on motor vehicles (Section 3-1.5.5)

## **3-1.8 TREATMENT OR CONTROL**

(Reserved)

## **3-1.9 STORAGE**

(Reserved)

## **3-1.10 DISPOSAL**

(Reserved)

## **3-1.11 SPECIAL REQUIREMENTS**

### **3-1.11.1 Air Toxics Reporting and Control**

(a) Within one year of the effective date of this section and every three years thereafter, the Commander, USAKA, shall prepare a report, as referenced in Section 2-7.1.1(a), describing the extent and nature of the use on USAKA of the chemicals listed in Appendix 3-1A and all the measures that will be taken to reduce emissions and to eliminate or reduce the use of chemicals at USAKA. The report may be based on the inventory of sources and emissions (Section 3-1.11.3) and shall be submitted to the Appropriate Agencies.

(b) The report shall include the appropriate contacts and procedures for responding to releases, anticipated releases, or facility conditions requiring emergency notification as stipulated in Section 2-7.3.1(b). To the extent the same information is contained in the Kwajalein Environmental Emergency Plan (KEEP, Section 3-6.4.1), the report may reference the relevant sections of the KEEP.

### **3-1.11.2 Ozone-Depleting Chemicals**

- (a) Within one year of the effective date of these Standards and every three years thereafter, the Commander, USAKA, shall prepare a report as referenced in Section 2-7.1.1(b), and submit it to the Appropriate Agencies. The report shall describe the extent and nature of use at USAKA of the ozone-depleting substances listed in Appendix 3-1B. The report also shall include a description of the measures that have been taken or will be taken to reduce or eliminate the use of ozone-depleting substances at USAKA.
- (b) The Commander, USAKA, shall take all reasonable and necessary measures to eliminate the use of ozone-depleting chemicals at USAKA.
- (c) Intentional venting for disposing of ozone-depleting chemicals to the atmosphere is prohibited.
- (d) USAKA shall not offer ozone-depleting substances for sale, distribution, or use outside of USAKA but within the RMI unless authorized in writing by RMIEPA. Such authorization may be granted only to the Commander, USAKA.
- (e) Within one year of the effective date of these Standards, recovery units or recycling units, or both, shall be used in maintaining and servicing refrigeration and air conditioning equipment, including motor vehicle air conditioning equipment, and appliances containing ozone-depleting chemicals. The Commander, USAKA, shall ensure that all persons operating recovery equipment and recycling equipment are properly trained.

### **3-1.11.3 Inventory of Stationary-Source Emissions**

- (a) Within one year of the effective date of these Standards, the Commander, USAKA, shall prepare an inventory [Section 2-7.1.1(c)] of stationary sources of air pollutants and the types and amounts of pollutants emitted by each source at USAKA. The pollutants to be identified in the emission inventory are criteria pollutants (except ozone), volatile organic compounds, and hazardous air pollutants listed in Appendix 3-1A. Upon completion, the inventory shall be submitted to the Appropriate Agencies. In addition, the inventory shall be updated and submitted to the Appropriate Agencies upon issuance of a DEP (Section 2-17.3) for all new stationary sources (Section 3-1.5.2). As appropriate for the individual sources, the inventory shall include, but shall not be limited to, the following information:
  - (1) Source name, type, and location.
  - (2) Location, nature, and height of the emission point.
  - (3) Stack diameter and stack-gas temperature and velocity.



**[3-1.11.3(a)]**

- (4) Maximum hourly emission rate for each criteria air pollutant emitted.
  - (5) Average hourly emission rate for each criteria air pollutant emitted.
  - (6) Annual emission rate for each criteria air pollutant emitted.
  - (7) Maximum allowable hourly and annual emission rates for each criteria air pollutant emitted.
- (b) Data required by Sections 3-1.11.3(a)(2) through (6) for the emission inventory shall be based on actual measured emissions and related parameters or on the application of USEPA-approved estimation methods. Data required by Section 3-1.11.3(a)(7) for the emission inventory shall be based on all available emission data as shown in NPAs, NCAs, or DEPs.

**APPENDIX 3-1A**  
**SUBSTANCES REQUIRING A DOCUMENT OF ENVIRONMENTAL**  
**PROTECTION IF EMISSIONS EXCEED 10 TONS PER YEAR**

<b>TABLE 3-1A</b> <b>SUBSTANCES REQUIRING A DEP</b>	
<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
75070	acetaldehyde
60350	acetamide
75058	acetonitrile
98862	acetophenone
53963	2-acetylaminofluorene
107028	acrolein
79061	acrylamide
79107	acrylic acid
107131	acrylonitrile
107051	allyl chloride
92671	4-aminobiphenyl
62533	aniline
90040	o-anisidine
1332214	asbestos
71432	benzene (including benzene from gasoline)
92875	benzidine
98077	benzotrichloride
100447	benzyl chloride
92524	biphenyl
117817	bis(2-ethylhexyl)phthalate(DEHP)
542881	bis(chloromethyl)ether
75252	bromoform
106990	1,3-butadiene
156627	calcium cyanamide
133062	captan

**TABLE 3-1A  
SUBSTANCES REQUIRING A DEP**

<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
63252	carbaryl
75150	carbon disulfide
56235	carbon tetrachloride
463581	carbonyl sulfide
120809	catechol
133904	chloramben
57749	chlordane
7782505	chlorine
79118	chloroacetic acid
532274	2-chloroacetophenone
108907	chlorobenzene
510156	chlorobenzilate
67663	chloroform
107302	chloromethyl methyl ether
126998	chloroprene
1319773	cresols/cresylic acid (isomers and mixture)
95487	o-cresol
108394	m-cresol
106445	p-cresol
98828	cumene
94757	2,4-D, salts and esters
3547044	2,2-bis(p-chlorophenyl)-1,1-dichloroethylene
334883	diazomethane
132649	dibenzofurans
96128	1,2-dibromo-3-chloropropane
34742	dibutylphthalate
106467	1,4-dichlorobenzene(p)

**TABLE 3-1A  
SUBSTANCES REQUIRING A DEP**

<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
91941	3,3-dichlorobenzidine
111444	dichloroethyl ester (bis(2-chloroethyl)ether)
542756	1,3-dichloropropene
62737	dichlorvos
111422	diethanolamine
121697	n,n-diethyl aniline (n,n-dimethylaniline)
64675	diethyl sulfate
119904	3,3-dimethoxybenzidine
60117	dimethyl aminoazobenzene
119937	3,3'-dimethyl benzidine
79447	dimethyl carbamoyl chloride
68122	dimethyl formamide
57147	1,1-dimethyl hydrazine
13113	dimethyl phthalate
77781	dimethyl sulfate
534521	4,6-dinitro-o-cresol, and salts
51285	2,4-dinitrophenol
121142	2,4-dinitrotoluene
123911	1,4-dioxane (1,4-diethyleneoxide)
122667	1,2-diphenylhydrazine
106898	epichlorohydrin (1-chloro-2,3-epoxypropane)
106887	1,2-epoxybutane
140885	ethyl acrylate
100414	ethyl benzene
51796	ethyl carbamate (urethane)
75003	ethyl chloride (chloroethane)
106934	ethylene dibromide (dibromoethane)

**TABLE 3-1A**  
**SUBSTANCES REQUIRING A DEP**

<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
107062	ethylene dichloride (1,2-dichloroethane)
107211	ethylene glycol
151564	ethylene imine (aziridine)
75218	ethylene oxide
96457	ethylene thiourea
75343	ethylidene dichloride (1,1-dichloroethane)
50000	formaldehyde
76448	heptachlor
118741	hexachlorobenzene
87683	hexachlorobutadiene
77474	hexachlorocyclopentadiene
67721	hexachloroethane
822060	hexamethylene-1,6-diisocyanate
680319	hexamethylphosphoramide
110543	hexane
302012	hydrazine
7647010	hydrochloric acid
7664393	hydrogen fluoride (hydrofluoric acid)
123319	hydroquinone
78591	isophorone
58899	lindane (all isomers)
108316	maleic anhydride
67561	methanol
72435	methoxychlor
74839	methyl bromide (bromomethane)
74873	methyl chloride (chloromethane)
71556	methyl chloroform (1,1,1-trichloroethane)

**TABLE 3-1A  
SUBSTANCES REQUIRING A DEP**

<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
78933	methyl ethyl ketone (2-butanone)
60344	methyl hydrazine
74884	methyl iodide (iodomethane)
108101	methyl isobutyl ketone (hexone)
624839	methyl isocyanate
80626	methyl methacrylate
1634044	methyl tert butyl ether
101144	4,4-methylene bis(2-chloroaniline)
75092	methylene chloride (dichloromethane)
101688	methylene diphenyl diisocyanate (MDI)
101779	4,4'-methylenedianiline
91203	naphthalene
98953	nitrobenzene
92933	4-nitrobiphenyl
100027	4-nitrophenol
79469	2-nitropropane
684935	n-nitroso-n-methylurea
62759	n-nitrosodimethylamine
59892	n-nitrosomorpholine
56382	parathion
82688	pentachloronitrobenzene (quintobenzene)
87865	pentachlorophenol
108952	phenol
106503	p-phenylenediamine
75445	phosgene
7803512	phosphine
7723140	phosphorus

**TABLE 3-1A  
SUBSTANCES REQUIRING A DEP**

<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
85449	phthalic anhydride
1336363	polychlorinated biphenyls (aroclers)
1120714	1,3-propane sultone
57578	beta-propiolactone
123386	propionaldehyde
114261	propoxur (baygon)
78875	propylene dichloride (1,2-dichloropropane)
75569	propylene oxide
75558	1,2-propylenimine (2-methyl aziridine)
91225	quinoline
106514	quinone
100425	styrene
06093	styrene oxide
1746016	2,3,7,8-tetrachlorodibenzo-p-dioxin
79345	1,1,2,2-tetrachloroethane
127184	tetrachloroethylene (perchloroethylene)
7550450	titanium tetrachloride
108883	toluene
95807	2,4-toluene diamine
584849	2,4-toluene diisocyanate
95534	o-toluidine
8001352	toxaphene (chlorinated camphene)
120821	1,2,4-trichlorobenzene
79005	1,1,2-trichloroethane
79016	trichloroethylene
95954	2,4,5-trichlorophenol
88062	2,4,6-trichlorophenol

**TABLE 3-1A**  
**SUBSTANCES REQUIRING A DEP**

<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
121448	triethylamine
1582098	trifluralin
540841	2,2,4-trimethylpentane
108054	vinyl acetate
593602	vinyl bromide
75014	vinyl chloride
75354	vinylidene chloride (1,1-dichloroethylene)
1330207	xylenes (isomers and mixture)
95476	o-xylenes
108383	m-xylenes
106423	p-xylenes
0	antimony compounds
0	arsenic compounds (inorganic including arsine)
0	beryllium compounds
0	cadmium compounds
0	chromium compounds
0	cobalt compounds
0	coke oven emissions
0	cyanide compounds <sup>1</sup>
0	glycol ethers <sup>2</sup>
0	lead compounds
0	manganese compounds
0	mercury compounds
0	fine mineral fibers <sup>3</sup>
0	nickel compounds
0	polycyclic organic matter <sup>4</sup>
0	radionuclides (including radon) <sup>5</sup>



**TABLE 3-1A  
SUBSTANCES REQUIRING A DEP**

<b>Chemical Abstract Service (CAS) No.</b>	<b>Chemical Name</b>
0	selenium compounds
<p>NOTE: For all lists that contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these lists are defined as including all unique chemical substances that contain the named chemical (e.g., antimony, arsenic) as part of the chemical's infrastructure.</p> <p><sup>1</sup> <math>X^1CN</math> where <math>X = H^3</math> or any other group where a formal dissociation may occur. For example, KCN or <math>Ca(CN)_2</math>.</p> <p><sup>2</sup> Includes mono- and di- ethers of ethylene glycol, diethylene glycol, and triethylene glycol <math>R-(OCH_2CH_2)_n-OR^1</math> where</p> <p style="margin-left: 40px;">n = 1, 2, or 3  R = alkyl or aryl groups  <math>R^1</math> = R, H, or groups which, when removed, yield glycol ethers with the structure: <math>R-(OCH_2CH_2)_n-</math> polymers are excluded from the glycol category.</p> <p><sup>3</sup> Includes emissions of mineral fibers from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral-derived fibers) of average diameter of 1 micrometer or less.</p> <p><sup>4</sup> Includes organic compounds having more than one benzene ring and a boiling point higher than or equal to 100° C.</p> <p><sup>5</sup> A type of atom that spontaneously undergoes radioactive decay.</p> <p>Reference: Clean Air Act, §112(b)(1); 40 CFR 63.60, amended at 61 FR 30823, June 18, 1996</p>	

**APPENDIX 3-1B**  
**OZONE-DEPLETING CHEMICALS**

<b>TABLE 3-1B.1</b> <b>CLASS I CONTROLLED SUBSTANCES</b>	
<b>CONTROLLED SUBSTANCE</b>	<b>ODP</b>
(a) Group I	
$\text{CFCl}_3$ - Trichlorofluoromethane (CFC-11)	1.0
$\text{CF}_2\text{Cl}_2$ - Dichlorodifluoromethane (CFC-12)	1.0
$\text{C}_2\text{F}_3\text{Cl}_3$ - Trichlorotrifluoroethane (CFC-113)	0.8
$\text{C}_2\text{F}_4\text{Cl}_2$ - Dichlorotetrafluoroethane (CFC-114)	1.0
$\text{C}_2\text{F}_5\text{Cl}$ - Chloropentafluoroethane (CFC-115)	0.6
All isomers of the above chemicals	
(b) Group II	
$\text{CF}_2\text{ClBr}$ - Bromochlorodifluoromethane (Halon-1211)	3.0
$\text{CF}_3\text{Br}$ - Bromotrifluoromethane (Halon-1301)	10.0
$\text{C}_2\text{F}_4\text{Br}_2$ - Dibromotetrafluoroethane (Halon-2402)	6.0
All isomers of the above chemicals	
(c) Group III	
$\text{CF}_3\text{Cl}$ - Chlorotrifluoromethane (CFC-13)	1.0
$\text{C}_2\text{FCl}_5$ - Pentachlorofluoroethane (CFC-111)	1.0
$\text{C}_2\text{F}_2\text{Cl}_4$ - Tetrachlorodifluoroethane (CFC-112)	1.0
$\text{C}_3\text{FCl}_7$ - Heptachlorofluoropropane (CFC-211)	1.0
$\text{C}_3\text{F}_2\text{Cl}_6$ - Hexachlorodifluoropropane (CFC-212)	1.0
$\text{C}_3\text{F}_3\text{Cl}_5$ - Pentachlorotrifluoropropane (CFC-213)	1.0
$\text{C}_3\text{F}_4\text{Cl}_4$ - Tetrachlorotetrafluoropropane (CFC-214)	1.0
$\text{C}_3\text{F}_5\text{Cl}_3$ - Trichloropentafluoropropane (CFC-215)	1.0
$\text{C}_3\text{F}_6\text{Cl}_2$ - Dichlorohexafluoropropane (CFC-216)	1.0
$\text{C}_3\text{F}_7\text{Cl}$ - Chloroheptafluoropropane (CFC-217)	1.0
All isomers of the above chemicals	
(d) Group IV	
$\text{CCl}_4$ - Carbon tetrachloride	1.1
(e) Group V	
$\text{C}_2\text{H}_3\text{Cl}_3$ - 1,1,1-Trichloroethane (Methyl chloroform)	0.1
All isomers of the above chemical except 1,1,2-Trichloroethane	
(f) Group VI	
$\text{CH}_3\text{Br}$ - Bromomethane (Methyl bromide)	0.7

<b>TABLE 3-1B.1</b> <b>CLASS I CONTROLLED SUBSTANCES</b>	
<b>CONTROLLED SUBSTANCE</b>	<b>ODP</b>
(g) Group VII	
$\text{CHFBr}_2$ - Dibromofluoromethane	1.00
$\text{CHF}_2\text{Br}$ - Bromodifluoromethane (HBFC-2201)	0.74
$\text{CH}_2\text{FBr}$ - Bromofluoromethane	0.73
$\text{C}_2\text{HFBr}_4$ - Tetrabromofluoroethane	0.3-0.8
$\text{C}_2\text{HF}_2\text{Br}_3$ - Tribromodifluoroethane	0.5-1.8
$\text{C}_2\text{HF}_3\text{Br}_2$ - Dibromotrifluoroethane	0.4-1.6
$\text{C}_2\text{HF}_4\text{Br}$ - Bromotetrafluoroethane	0.7-1.2
$\text{C}_2\text{H}_2\text{FBr}_3$ - Tribromofluoroethane	0.1-1.1
$\text{C}_2\text{H}_2\text{F}_2\text{Br}_2$ - Dibromodifluoroethane	0.2-1.5
$\text{C}_2\text{H}_2\text{F}_3\text{Br}$ - Bromotrifluoroethane	0.7-1.6
$\text{C}_2\text{H}_3\text{FBr}_2$ - Dibromofluoroethane	0.1-1.7
$\text{C}_2\text{H}_3\text{F}_2\text{Br}$ - Bromodifluoroethane	0.2-1.1
$\text{C}_2\text{H}_4\text{FBr}$ - Bromofluoroethane	0.07-0.1
$\text{C}_3\text{HFBBr}_6$ - Hexabromofluoropropane	0.3-1.5
$\text{C}_3\text{HF}_2\text{Br}_5$ - Pentabromodifluoropropane	0.2-1.9
$\text{C}_3\text{HF}_3\text{Br}_4$ - Tetrabromotrifluoropropane	0.3-1.8
$\text{C}_3\text{HF}_4\text{Br}_3$ - Tribromotetrafluoropropane	0.5-2.2
$\text{C}_3\text{HF}_5\text{Br}_2$ - Dibromopentafluoropropane	0.9-2.0
$\text{C}_3\text{HF}_6\text{Br}$ - Bromohexafluoropropane	0.7-3.3
$\text{C}_3\text{H}_2\text{FBr}_5$ - Pentabromofluoropropane	0.1-1.9
$\text{C}_3\text{H}_2\text{F}_2\text{Br}_4$ - Tetrabromodifluoropropane	0.2-2.1
$\text{C}_3\text{H}_2\text{F}_3\text{Br}_3$ - Tribromotrifluoropropane	0.2-5.6
$\text{C}_3\text{H}_2\text{F}_4\text{Br}_2$ - Dibromotetrafluoropropane	0.3-7.5
$\text{C}_3\text{H}_2\text{F}_5\text{Br}$ - Bromopentafluoropropane	0.9-14
$\text{C}_3\text{H}_3\text{FBr}_4$ - Tetrabromofluoropropane	0.08-1.9
$\text{C}_3\text{H}_3\text{F}_2\text{Br}_3$ - Tribromodifluoropropane	0.1-3.1
$\text{C}_3\text{H}_3\text{F}_3\text{Br}_2$ - Dibromotrifluoropropane	0.1-2.5
$\text{C}_3\text{H}_3\text{F}_4\text{Br}$ - Bromotetrafluoropropane	0.3-4.4
$\text{C}_3\text{H}_4\text{FBr}_3$ - Tribromofluoropropane	0.03-0.3
$\text{C}_3\text{H}_4\text{F}_2\text{Br}_2$ - Dibromodifluoropropane	0.1-1.0
$\text{C}_3\text{H}_4\text{F}_3\text{Br}$ - Bromotrifluoropropane	0.07-0.8

<b>TABLE 3-1B.1</b> <b>CLASS I CONTROLLED SUBSTANCES</b>	
<b>CONTROLLED SUBSTANCE</b>	<b>ODP</b>
$C_3H_5FBr_2$ - Dibromofluoropropane	0.04-0.4
$C_3H_5F_2Br$ - Bromodifluoropropane	0.07-0.8
$C_3H_6FBr$ - Bromofluoropropane	0.02-0.7
Reference: 40 CFR Part 82, Appendix A to Subpart A amended at 56 FR 67371, Dec. 30, 1991; revised at 57 FR 33787, July 30, 1992; 58 FR 65062, Dec. 10, 1993; 60 FR 24986, May 10, 1995	
Note: Ozone Depletion Potential (ODP)	

<b>TABLE 3-1B.2</b> <b>CLASS II CONTROLLED SUBSTANCES</b>	
<b>CONTROLLED SUBSTANCE</b>	<b>ODP</b>
$CH_2FCl_2$ - Dichlorodifluoromethane (HCFC-21)	(Reserved)
$CHF_2Cl$ - Chlorodifluoromethane (HCFC-22)	0.05
$CH_2FCl$ - Chlorofluoromethane (HCFC-31)	(Reserved)
$C_2H_2FCl_4$ - Tetrachlorofluoroethane (HCFC-121)	(Reserved)
$C_2HF_2Cl_3$ - Trichlorodifluoroethane (HCFC-122)	(Reserved)
$C_2HF_3Cl_2$ - Dichlorotrifluoroethane (HCFC-123)	0.02
$C_2HF_4Cl$ - Chlorotetrafluoroethane (HCFC-124)	0.02
$C_2H_2FCl_3$ - Trichlorofluoroethane (HCFC-131)	(Reserved)
$C_2H_2F_2Cl_2$ - Dichlorodifluoroethane (HCFC-132b)	(Reserved)
$C_2H_2F_3Cl$ - Chlorotrifluoroethane (HCFC-133a)	(Reserved)
$C_2H_3FCl_2$ - Dichlorofluoroethane (HCFC-141b)	0.12
$C_2H_3F_2Cl$ - Chlorodifluoroethane (HCFC-142b)	0.06
$C_3H_2FCl_6$ - Hexachlorofluoropropane (HCFC-221)	(Reserved)
$C_3HF_2Cl_5$ - Pentachlorodifluoropropane (HCFC-222)	(Reserved)
$C_3HF_3Cl_4$ - Tetrachlorotrifluoropropane (HCFC-223)	(Reserved)
$C_3HF_4Cl_3$ - Trichlorotetrafluoropropane (HCFC-224)	(Reserved)
$C_3HF_5Cl_2$ - Dichloropentafluoropropane (HCFC-225ca)	(Reserved)
$C_3HF_5Cl$ - Chloropentafluoropropane (HCFC-225cb)	(Reserved)
$C_3HF_6Cl$ - Chlorohexafluoropropane (HCFC-226)	(Reserved)
$C_3H_2FCl_5$ - Pentachlorofluoropropane (HCFC-231)	(Reserved)
$C_3H_2F_2Cl_4$ - Tetrachlorodifluoropropane (HCFC-232)	(Reserved)

<b>TABLE 3-1B.2</b> <b>CLASS II CONTROLLED SUBSTANCES</b>	
<b>CONTROLLED SUBSTANCE</b>	<b>ODP</b>
$C_3H_2F_3Cl_3$ - Trichlorotrifluoropropane (HCFC-233)	(Reserved)
$C_3H_2F_4Cl_2$ - Dichlorotetrafluoropropane (HCFC-234)	(Reserved)
$C_3H_2F_5Cl$ - Chloropentafluoropropane (HCFC-235)	(Reserved)
$C_3H_3FCl_4$ - Tetrachlorofluoropropane (HCFC-241)	(Reserved)
$C_3H_3F_2Cl_3$ - Trichlorodifluoropropane (HCFC-242)	(Reserved)
$C_3H_3F_3Cl_2$ - Dichlorotrifluoropropane (HCFC-243)	(Reserved)
$C_3H_3F_4Cl$ - Chlorotetrafluoropropane (HCFC-244)	(Reserved)
$C_3H_4FCl_3$ - Trichlorofluoropropane (HCFC-251)	(Reserved)
$C_3H_4F_2Cl_2$ - Dichlorodifluoropropane (HCFC-252)	(Reserved)
$C_3H_4F_3Cl$ - Chlorotrifluoropropane (HCFC-253)	(Reserved)
$C_3H_5FCl_2$ - Dichlorofluoropropane (HCFC-261)	(Reserved)
$C_3H_5F_2Cl$ - Chlorodifluoropropane (HCFC-262)	(Reserved)
$C_3H_6FCl$ - Chlorofluoropropane (HCFC-271)	(Reserved)
All isomers of the above chemicals	
Reference: 40 CFR Part 82, Appendix B to Subpart A amended at 56 FR 67371, Dec. 30, 1991; revised at 57 FR 33787, July 30, 1992; 58 FR 65062, Dec. 10, 1993; 60 FR 24986, May 10, 1995	
Note: Ozone Depletion Potential (ODP)	

**APPENDIX 3-1C  
STANDARDS FOR INCINERATORS ACCEPTING  
REGULATED MEDICAL WASTE**

The following standards apply to new and existing incinerators accepting greater than 10% of the total waste stream as Regulated Medical Waste (RMW). These requirements do not apply to: municipal solid waste incinerator receiving less than 10% RMW provided that USAKA maintains records on the types and amounts of waste combusted; any field deployable portable units; pyrolysis units; Medical Waste Incinerators (MWIs) that burn only pathological, low-level radioactive waste; or chemotherapeutic waste. New and retrofitted incinerators shall operate in accordance with Appendix 3-1C.1. Existing incinerators shall operate in accordance with Appendix 3-1C.1 by January 1, 2003. Handling of RMW prior to incineration shall be in accordance with Section 3-6.5.7(c)(3)(i)(B).

**3-1C.1** A new and existing incinerator must be designed and operated according to the following:

- (a) Unit design: dual chamber
- (b) Minimum temperature in primary chamber: 1400-1600° F.
- (c) Minimum temperature in secondary chamber: 1800-2200° F.
- (d) Minimum residence time in the secondary chamber: 2 seconds.
- (e) Stack height to facilitate proper dispersion.

**3-1C.2** Incinerator operators shall be trained in proper incinerator operation and good combustion practices.

**APPENDIX 3-1D**  
**EMISSION STANDARDS FOR APPLICATION,**  
**DEMOLITION, OR RENOVATION OF ASBESTOS**

**3-1D.1 APPLICABILITY**

The provisions of this appendix incorporate Section 2-6.2.8 and apply to each owner or operator of an operation in which asbestos-containing materials are spray-applied and to demolition and renovation operations as follows:

(a) If the friable asbestos materials in a facility being demolished are at least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, all the requirements of Sections 3-1D.2 and 3-1D.3 apply.

(b) If the friable asbestos materials in a facility being demolished are less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, only the requirements of Section 3-1D.2(a), (b), and (c)(1) through (5) apply.

(c) If at least 80 linear meters (260 linear feet) of friable asbestos materials on pipes or at least 15 square meters (160 square feet) of friable asbestos materials on other facility components are stripped or removed at a facility being renovated, all the requirements of Sections 3-1D.2 and 3-1D.3 apply.

(1) To determine whether this section [3-1D.1(c)] applies to planned renovation operations involving individual unscheduled operations, predict the amount of friable asbestos materials to be removed or stripped over the maximum period of time a prediction can be made, not to exceed 1 year.

(2) To determine whether this section [3-1D.1(c)] applies to emergency renovation operations, estimate the amount of friable asbestos materials to be removed or stripped as a result of the sudden and unexpected event that necessitated the renovation.

(d) Each owner or operator of an operation in which asbestos-containing materials are spray-applied shall comply with the requirements of Section 3-1D.4.

**3-1D.2 STANDARD FOR DEMOLITION AND RENOVATION:**  
**NOTIFICATION REQUIREMENTS**

Each owner or operator to which this section applies shall:

(a) Furnish to the Commander, USAKA, written notice of the intention to demolish or renovate.

(b) Such notice shall be delivered as follows:

(1) At least 10 days before demolition begins if the operation is described in Section 3-1D.1(a).

(2) At least 20 days before demolition begins if the operation is described in Section 3-1D.1(b).

(3) As early as possible before renovation begins.

(c) The following information shall be included in the notice:

(1) Name and address of owner or operator.

(2) Description of the facility being demolished or renovated, including the size, age, and previous use of the facility.

(3) Estimate of the approximate amount of friable asbestos material in the facility in linear feet of pipe and in surface area on other facility components. For facilities described in Section 3-1D.1(b), an explanation of the techniques used for estimating.

(4) Location of the facility being demolished or renovated.

(5) Scheduled starting and completion dates of demolition or renovation.

(6) Nature of planned demolition or renovation and methods(s) to be used.

(7) Procedures to be used for complying with the requirements of this appendix.

(8) Name and location of the waste-disposal site where the friable asbestos waste materials will be deposited.

### **3-1D.3 STANDARD FOR DEMOLITION AND RENOVATION: PROCEDURES FOR CONTROLLING ASBESTOS EMISSIONS**

Each owner or operator to which this section applies shall comply with the following procedures to prevent emissions of particulate asbestos material to the outside air:

(a) Remove friable asbestos materials from the facility being demolished or renovated before performing wrecking or dismantling that would break up the materials or prevent access to the materials for subsequent removal. Friable asbestos materials need not be removed before demolition if:



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(1) They are on a facility component that is encased in concrete or other similar material; and

(2) The materials have been wet adequately whenever exposed during demolition.

(b) When a facility component that is covered or coated with friable asbestos materials is being taken out of the facility as units or in sections:

(1) Adequately wet all friable asbestos materials exposed during cutting or disjointing operations.

(2) Carefully lower the units or sections to ground level, not dropping them or throwing them.

(c) Adequately wet friable asbestos materials when they are being stripped from facility components before the structural members are removed from the facility. In renovation operations, wetting that would unavoidably damage equipment is not required if the owner or operator:

(1) Asks the Commander, USAKA, to determine whether wetting to comply with this paragraph would unavoidably damage equipment and, before beginning to strip, supplies the Commander, USAKA, with adequate information for making this determination. The individual who makes the determination shall be trained in the proper handling of hazardous waste as required under Sections 2-10 and 3-6.5.1(d).

(2) When the Commander, USAKA, determines that equipment damage would be unavoidable, uses a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos materials produced by the stripping and removal of the friable asbestos materials. The system must exhibit no visible emissions to the outside air or must be designed and operated in accordance with the requirements in Section 3-1D.6.

(d) After a facility component has been taken out of the facility as units or in sections, either:

(1) Adequately wet friable asbestos materials during stripping; or

(2) Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or must be designed and operated in accordance with the requirements of Section 3-1D.6.

(e) For friable asbestos materials that have been removed or stripped, use the following procedures:

(1) Adequately wet the materials to ensure that they remain wet until they are collected for disposal in accordance with Section 3-1D.5.

(2) Carefully lower the materials to the ground or a lower floor, not dropping or throwing them.

(3) Transport the materials to the ground through dust-tight chutes or containers if they have been removed or stripped more than 50 feet above ground level and were not removed as units or in sections.

### **3-1D.4 STANDARD FOR SPRAYING**

The owner or operator of an operation in which asbestos-containing materials are spray-applied shall comply with the following requirements:

(a) Use materials that contain 1 percent asbestos or less on a dry-weight basis for spray-on application on buildings, structures, pipes, and conduits, except as provided in Section 3-1D.4(c).

(b) For spray-on application of materials that contain more than 1 percent asbestos on a dry-weight basis on equipment and machinery, except as provided in Section 3-1D.4(c):

(1) Notify the Commander, USAKA, at least 20 days before beginning the spraying operation. Include the following information in the notice:

(i) Name and address of owner or operator.

(ii) Location of spraying operation.

(iii) Procedures to be followed to meet the requirements of this section [3-1D.4(b)].

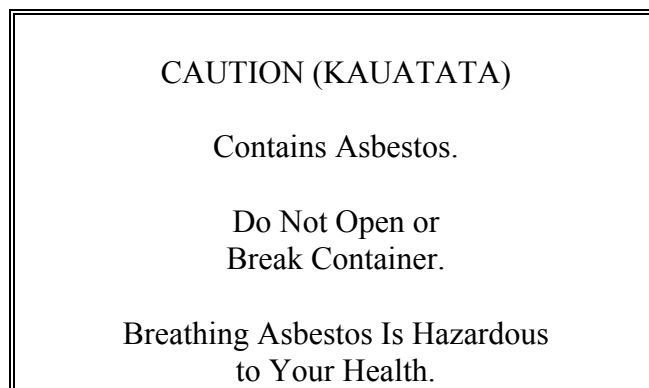
(2) Discharge no visible emissions to the outside air from the spray-on application of the asbestos-containing material, or use the methods specified in Section 3-1D.6 to clean emissions containing particulate asbestos material before they escape to or are vented to the outside air.

(c) The requirements of Section 3-1D.4(a) and (b) do not apply to the spray-on application of materials if the asbestos fibers in the materials are encapsulated by a bituminous or resinous binder during spraying and the materials are not friable after drying.

### **3-1D.5 STANDARD FOR WASTE DISPOSAL FOR DEMOLITION, RENOVATION, AND SPRAYING OPERATIONS**

Each owner or operator of a source covered under the provisions of Sections 3-1D.3 or 3-1D.4 shall:

- (a) Deposit all asbestos-containing waste material at waste-disposal sites in the United States operated in compliance with U.S. statutes and regulations.
- (b) Discharge no visible emissions to the outside air during the collection, processing, packaging, and transporting of asbestos-containing waste material generated by the source, or use one of the following methods:
  - (1) Treat asbestos-containing waste material with water.
    - (i) Mix asbestos waste from control devices with water to form a slurry; adequately wet other asbestos-containing waste material.
    - (ii) Discharge no visible emissions to the outside air from collection, mixing, and wetting operations, or use the methods specified in Section 3-1D.6 to clean emissions containing particulate asbestos material before they escape to or are vented to the outside air.
    - (iii) After wetting, seal all asbestos-containing waste material in leak-tight containers while the waste material is wet.
    - (iv) Label the containers specified in Section 3-1D.5(b)(1)(iii) in English and in Marshallese as follows:



Alternatively, use warning labels specified by the Occupational Safety and Health Standards of the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), under 29 CFR 1910.1001(g)(2)(ii).

- (2) Process asbestos-containing waste material into nonfriable forms:
  - (i) Form all asbestos-containing waste material into nonfriable pellets or other shapes.
  - (ii) Discharge no visible emissions to the outside air from collection and processing operations, or use the methods specified in Section 3-1D.6 to clean emissions containing particulate asbestos material before they escape to or are vented to the outside air.

### **3-1D.6 AIR CLEANING**

- (a) The owner or operator who elects to use air cleaning as allowed under Sections 3-1D.3(c)(2) and (d)(2) and 3-1D.5(b)(1)(ii) and (b)(2)(ii) shall:

- (1) Use fabric-filter collection devices except as noted in Section 3-1D.6(b), doing all of the following:

- (i) Operate the fabric-filter collection devices at a pressure drop of no more than 0.995 kilopascal (4 inches of water-gauge pressure), as measured across the filter fabric.

- (ii) Ensure that the air-flow permeability, as determined by American Society for Testing and Materials (ASTM) Method D737-75, does not exceed  $9 \text{ m}^3/\text{min}/\text{m}^2$  ( $30 \text{ ft}^3/\text{min}/\text{ft}^2$ ) for woven fabrics or  $11 \text{ m}^3/\text{min}/\text{m}^2$  ( $35 \text{ ft}^3/\text{min}/\text{ft}^2$ ) for felted fabrics.

- (iii) Ensure that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) and is at least 1.6 millimeters (one-sixteenth of an inch) thick throughout.

- (iv) Avoiding using synthetic fabrics that contain fill yarn other than yarn that is spun.

- (2) Properly install, use, operate, and maintain all air-cleaning equipment authorized by this section. Bypass devices may be used only during upset or emergencies and then only for as long as it takes to shut down the operation that is generating the particulate asbestos material.

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(b) The exceptions to Section 3-1D.6(a)(1) are:

(1) If using fabric creates a fire or an explosion hazard, the Commander, USAKA, may authorize as a substitute wet collectors designed to operate with a unit contacting energy of at least 9.95 kilopascals (40 inches of water-gauge pressure).

(2) The Commander, USAKA, may authorize the use of filtering equipment other than that described in Sections 3-1D.6(a)(1) and (b)(1) if the owner or operator demonstrates to the satisfaction of the Commander, USAKA, that the filtering equipment is equivalent to the described equipment in filtering particulate asbestos material.

**3-1D.7 REPORTING**

Within 90 days after the effective date of these Standards, each owner or operator of an existing source to which this appendix applies shall furnish the following information to the Commander, USAKA:

(a) A description of the emission-control equipment used for each process.

(b) If a fabric-filter device is used to control emissions, the pressure drop across the fabric filter in inches of water-gauge pressure.

(1) If the fabric-filter device uses a woven fabric, the air-flow permeability in  $\text{m}^3/\text{min}/\text{m}^2$  and if the fabric is synthetic, whether the fill yarn is spun or not spun.

(2) If the fabric-filter device uses a felted fabric, the density in  $\text{g}/\text{m}^2$ , the minimum thickness in inches, and the air-flow permeability in  $\text{m}^3/\text{min}/\text{m}^2$ .

(c) For sources subject to Section 3-1D.5:

(1) A brief description of each process that generates asbestos-containing waste material.

(2) The average weight of asbestos-containing waste material disposed of, measured in kg/day.

(3) The emission-control methods used in all stages of waste disposal.

(4) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

## **3-2 WATER QUALITY AND REEF PROTECTION**

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##### **3-2.6.4 Surface Water Antidegradation**

#### **3-2.7 DISCHARGE LIMITS, EMISSION STANDARDS, POLLUTION CONTROL**

##### **3-2.7.1 Point-Source Discharges**

##### **3-2.7.2 Reef Protection and Dredging, Quarrying, and Discharge of Dredged or Fill Materials**

##### **3-2.7.3 Nonpoint–Source Discharges**

##### **3-2.7.4 Discharge of Ballast Water**

##### **3-2.7.5 Reserved**

##### **3-2.7.6 Reclaimed Water**

#### **3-2.8 PROHIBITIONS**

##### **3-2.8.1 Class AA Coastal Waters**

##### **3-2.8.2 Class A Coastal Waters**

##### **3-2.8.3 Groundwater**

##### **3-2.8.4 Discharges of Oil**

##### **3-2.8.5 Dredge and Fill Material**

##### **3-2.8.6 Control of Sewage from Vessels**

##### **3-2.8.7 Reclaimed Water**

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**3-2.8.8 Point Source Discharges**

**3-2.9 TREATMENT OR CONTROL (Reserved)**

**3-2.10 STORAGE (Reserved)**

**3-2.11 DISPOSAL (Reserved)**

**3-2.12 SPECIAL REQUIREMENTS**

**3-2.12.1 Water Quality Monitoring**

### **3-2.1 INTRODUCTION**

This section establishes standards and procedures for managing surface and ground water quality, protecting coral reefs, and utilizing reclaimed water. The primary objectives of the standards for water quality and reef protection are: to protect the surface and ground water quality; to preserve coral reef resources; and to protect the public health by prescribing allowable uses and quality of reclaimed water. Stringent antidegradation provisions are provided for surface and ground waters as well as general and specific use categories and water quality standards. Discharges to surface waters must meet operational and effluent limits established through Documents of Environmental Protection and water quality management planning. Use of reclaimed water is limited to certain types of usage and governed by quality standards, signage requirements and public notice provisions. The health-based standards in this section that are subject to the provisions of Section 2-22 are in Section 3-2.7.6, the standards for microbiological contaminants in Table 3-2.C.1, and Appendices 3-2J and K.

### **3-2.2 DERIVATION**

Section 3-2 of the Standards is derived from 40 CFR 100-140 and 400-403, which establish regulations implementing provisions of the CWA, as amended. The Marine Water Quality and Earthmoving Regulations of the RMI also were consulted. The Standards apply to surface water, groundwater, and coastal marine water, including coastal reefs. Reclaimed water standards are derived from USEPA guidelines and state regulations. The Safe Drinking Water Act and the Primary and Secondary Drinking Water Regulations were consulted for groundwater quality standards.

### **3-2.3 SUMMARY OF CHANGES**

The water quality and reef protection standards deviate from 40 CFR 100-140 and 400-403 in that they address only the provisions that address substantive controls or requirements. Provisions relating to state program requirements, reporting, grants and delegations are not included. In addition, these Standards establish provisions for protecting groundwater quality that go beyond those established by U.S. statutes and regulations. The water quality and reef protection standards are applicable to all functions and facilities at USAKA without exception.

The Standards require USAKA to submit to Appropriate Agencies a water quality management plan similar in content to that required under U.S. statutes and regulations. The plan must identify wetland and coastal areas where dredging, quarrying, or discharge of dredged or fill material is prohibited; nonpoint sources of pollution; sources of groundwater contamination; reef resources and the management and control practices necessary for protecting them; and water bodies that do not comply with the Standards. The plan also must assess the nature and extent of stormwater discharges and include a discussion of management and control practices that ensure compliance with water quality standards.



### **3-2.4 WATER CLASSIFICATIONS**

#### **3-2.4.1 Classification of Coastal-Water Uses**

(a) Class AA Water

(1) The uses to be protected in Class AA water are oceanographic research, support and propagation of shellfish and other marine life, potential use as a potable-water source, conservation of coral reefs and wilderness areas, compatible recreation, and other aesthetic enjoyment.

(2) This class of water shall remain in as nearly the natural pristine state as possible, with an absolute minimum of pollution from any source. To the extent possible, the wilderness character of such areas shall be protected.

(3) No mixing zone or point-source discharge; destruction of reefs, aquatic life or aquatic habitats; or other destruction of water resources shall be authorized in Class AA water.

(4) The classification of any water area as Class AA shall not preclude other uses of such water that are compatible with the objectives for Class AA water and that conform to the standards applicable to them.

(b) Class A Water

(1) The uses to be protected in Class A water are recreational (including fishing, swimming, bathing, and other water-contact sports), aesthetic enjoyment, potential use as a potable-water source, and support and propagation of aquatic life.

(2) The use of this class of water for recreation and for aesthetic enjoyment shall not be limited in any way. Such water shall be kept clean of trash, solid materials, and oil. No mixing zone shall be allowed in Class A water.

(c) Class B Water

(1) The uses to be protected in Class B water are small-boat harbors, commercial and industrial shipping, bait fishing, compatible recreation, support and propagation of aquatic life, and aesthetic enjoyment.

(2) The discharge of all pollutants will be controlled to the extent necessary to achieve and maintain the standards established for Class B water.

(3) The Class B designation within harbors shall apply only to a limited area where appropriate, such as next to docking facilities. The rest of the water area in such a bay or harbor shall be Class A unless given another specific designation.

(d) Appendix 3-2A delineates the surface water around USAKA according to the three classifications of coastal-water uses. The water classification boundaries have been drawn based upon the best available information about the location of point-source discharges. The boundaries shall be reviewed annually.

### **3-2.4.2 Classification of Groundwater**

(a) Class I groundwater is groundwater having levels of total dissolved solids not exceeding 500 milligrams per liter (mg/l) and is a desired source of potable water.

(b) Class II groundwater is groundwater having levels of total dissolved solids exceeding 500 mg/l. Groundwater having levels of total dissolved solids less than 1,000 mg/l shall be designated as a potential source of potable water. Groundwater having levels of total dissolved solids of 1,000 - 10,000 mg/l shall be designated for other uses. Such designation shall be made by the Commander, USAKA.

(c) Class III groundwater is groundwater having levels of total dissolved solids exceeding 10,000 mg/l and is of limited use and quality and not suitable as a source of potable water.

(d) Appendix 3-2B delineates the groundwater at USAKA according to the three classifications of groundwater. Groundwaters not specifically delineated in Appendix 3-2B shall be considered as Class I groundwater, except for groundwater directly underlying solid waste disposal areas, HMWPP storage facilities, equipment maintenance facilities, and power generation facilities which shall be considered as Class III groundwater. The Commander, USAKA, may consider a change in classification based upon substantial new information demonstrating that the current classification should no longer apply. The Commander, USAKA shall consult with the Appropriate Agencies prior to changing a classification.

## **3-2.5 PLANS**

### **3-2.5.1 Water Quality Management Plan**

(a) Within one year of the effective date of these Standards, the Commander, USAKA, shall prepare and implement a water quality management plan (as described below and cited in Sections 2-7.1.2(a) and 3-2.7.3) that includes the following:

(1) Identification of important wetland and coastal areas in which there will be no dredging, quarrying, or discharge of dredged or fill materials.

**[3-2.5.1(a)]**

(2) Identification of nonpoint sources of pollution and of management and control practices that will be used to reduce or eliminate the sources.

(3) Identification of sources of groundwater contamination and of management and control practices that will be used to reduce or eliminate the sources.

(4) Identification of water bodies and groundwater not meeting the applicable standards in Appendices 3-2C or 3-2D, and of the additional management and control practices for point and nonpoint sources necessary to achieve the standards.

(5) Description of the program that will be implemented to monitor water quality and biota, including compliance with standards and requirements for protecting groundwater.

(6) Assessment of the nature and extent of discharges of stormwater and identification of the management and control practices that will be used to reduce or eliminate adverse effects.

(7) Identification of reef resources, including the types and structure of the coastal reefs surrounding the USAKA coastal island, and the management and control practices necessary to protect the reefs.

(8) Identification of the appropriate agency contacts and description of the conditions that would initiate emergency notification, including a breakdown of a pollution-control device or a bypass of wastewater treatment plant operations as specified in Section 2-7.3.1(a).

(b) The Commander, USAKA, shall submit the water quality management plan to the Appropriate Agencies for review before the plan is adopted.

(c) All comments from the Appropriate Agencies shall be incorporated in the final plan, or a justification for their exclusion shall be included in the final plan. Copies of the final plan shall be furnished to the Appropriate Agencies.

(d) USAKA shall implement the final water quality management plan and shall prepare and implement subsequent revisions of the plan.

(e) At least every two years USAKA shall review the water quality management plan and revise it as warranted. All revisions shall be submitted to the Appropriate Agencies before they are adopted. All comments from the reviewing agencies shall be considered before the revisions are adopted. If comments are not adopted in the final revisions, USAKA shall communicate to the reviewing agencies the reasons for not incorporating the review comments.

## **3-2.6 PERFORMANCE STANDARDS**

### **3-2.6.1 Groundwater**

Primary and secondary standards for groundwater presented in Appendix 3-2D, Tables 3-2D.1 and 3-2D.2, are derived from applicable sections of 40 CFR 141 and 143, respectively, which establish primary and secondary drinking water regulations. Both the primary and secondary standards apply to Class I and Class II groundwater. Where the background concentration is higher than the applicable standard for that parameter, the applicable standard shall be either the background level or the value given in Appendix 3-2D. The Commander, USAKA, in consultation with all Appropriate Agencies, shall make this determination considering the risk to public health and to the marine environment.

### **3-2.6.2 Groundwater Antidegradation**

(a) USAKA operations shall not degrade the quality of Class I or Class II groundwater in such a way that either:

(1) Causes primary or secondary standards for groundwater (Appendix 3-2D, Tables 3-2D.1 and 3-2D.2) to be exceeded, or

(2) Causes increases in the concentration of any substance or parameter listed in Appendix 3-2D that existed on the effective date of these Standards.

(b) USAKA operations shall not degrade the quality of Class III groundwater in such a way that results in increases of contaminate concentrations that will adversely affect public health, the marine environment, the quality of adjacent Class I or II groundwaters, or protected beneficial uses of surface waters.

(c) An exception to the antidegradation requirements of Sections 3-2.6.2(a) and 3-2.6.2(b) may be authorized by the Commander, USAKA only if all of the following conditions are met. The Commander, USAKA shall consult with the Appropriate Agencies prior to granting any such authorization.

(1) Evaluation of the proposed degradation of groundwater quality indicates that:

(i) There will be no adverse effect on public health under current conditions of groundwater use.

(ii) There will be no significant adverse effect on the marine environment as a result of the discharge of degraded groundwater through the reef or into surface water.

(2) The Commander, USAKA, ensures that appropriate actions as specified in Section 3-2.5.1 and 3-6.5.7(c)(6) are taken to protect public health under future situations of groundwater use that involve exposure to the degraded groundwater. Appropriate

[3-2.6.3]

future actions could include treatment of the degraded groundwater, treatment of the degraded groundwater as it is pumped for use, or provision of water from an alternative source. The appropriate action shall be selected by the Commander, USAKA, at the time action is required.

(3) Groundwater monitoring is performed as necessary to ensure that ~~excessive~~ degradation of groundwater quality is detected promptly.

**3-2.6.3 Water Quality Standards for Surface Water**

(a) General criteria applicable to all surface water. All water except water in a zone of initial dilution within a mixing zone established by a DEP, shall be:

(1) Capable of supporting desirable aquatic life and suitable for recreation in and on the water.

(2) Free from substances, attributable to wastewater discharges or other pollutant sources that:

(i) Settle to form objectionable deposits;

(ii) Float as debris, scum, oil, or other matter forming nuisances;

(iii) Produce objectionable color, odor, taste or turbidity;

(iv) Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals, or plants; or

(v) Produce undesirable or nuisance aquatic life.

(b) Specific criteria applicable to all surface water are as follows:

(1) Specific criteria for the quality of surface water are as classified in Section 3-2.4.1 and in Appendix 3-2C.

(2) Whenever natural conditions are of lower quality than that of an assigned water quality criteria, the natural conditions shall constitute the water quality criteria.

(3) Whenever two numeric criteria are in conflict, the more stringent criterion shall constitute the water quality criterion.

(4) Pollutant discharges to either surface water or groundwater shall be controlled to protect not only the receiving water but also the water into which the receiving water may flow and shall not cause unreasonable degradation.

### **3-2.6.4 Surface Water Antidegradation**

- (a) Existing water uses (as stated in section 3-2.4.1) and the level of water quality necessary to protect the existing uses (as stated in section 3-2.6.3) shall be maintained and protected.
- (b) In areas where water quality exceeds the requirements for its class of use, the water quality may be lowered to the level of the requirements for such waters, only if:
  - (1) there will be no adverse effect on public health under current conditions of surface water use, and
  - (2) allowing the degradation is necessary to accommodate important economic and social development, and
  - (3) the requirements of section 3-2.6.3 are met, and
  - (4) all point sources in the area are in compliance with Section 3-2.7.1 and any requirements specified in a DEP completed in accordance with Section 2-17.3, and
  - (5) all best management controls are used for nonpoint source control, and
  - (6) the Commander, USAKA, ensures that appropriate actions are taken to protect public health under future situations of surface water use that involve exposure to the degraded surface water. The appropriate action shall be selected by the Commander, USAKA, at the time action is required, and
  - (7) surface water monitoring is performed as necessary to ensure that degradation of surface water quality is detected promptly.
- (c) Where high quality waters constitute an outstanding natural resource, such as waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. Only temporary and short-term changes may be made in the water quality as long as the requirements of 3-2.6.3 are met and the essential character or special use of the water is not impacted.

## **3-2.7 DISCHARGE LIMITS, EMISSION STANDARDS, POLLUTION CONTROL**

### **3-2.7.1 Point-Source Discharges**

- (a) Within one year of the effective date of the Standards, discharge of pollutants from point sources existing on the day preceding the effective date shall not continue unless an NCA has been submitted in compliance with Section 2-17.3.4. In addition, no existing point source shall be modified unless the modification has been documented in a DEP.

**[3-2.7.1(b)]**

(b) No new point source shall be constructed or shall begin discharging to the waters of the RMI unless the action has been documented in a DEP (Section 2-17.3).

(c) All point sources from domestic wastewater treatment facilities shall receive a minimum of secondary treatment unless otherwise authorized in Section 3-2.7.1(e). The following paragraphs describe the minimum level of effluent quality attainable by secondary treatment in terms of three parameters: five-day biochemical oxygen demand (BOD<sub>5</sub>), suspended solids (SS), and pH.

(1) BOD<sub>5</sub>

- (i) The 30-day average shall not exceed 30 mg/l.
- (ii) The 7-day average shall not exceed 45 mg/l.
- (iii) The 30-day average percent removal shall not be less than 85 percent.

(2) In lieu of BOD<sub>5</sub> and the levels of effluent quality specified above, five-day carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>) may be used with the following levels of effluent quality for CBOD<sub>5</sub> provided that:

- (i) The 30-day average does not exceed 25 mg/l.
- (ii) The 7-day average does not exceed 40 mg/l.
- (iii) The 30-day average percent removal is not less than 85 percent.

(3) Suspended Solids

- (i) The 30-day average shall not exceed 30 mg/l.
- (ii) The 7-day average shall not exceed 45 mg/l.
- (iii) The 30-day average percent removal shall not be less than 85 percent.

(4) pH

The effluent values for pH shall be maintained within the limits of 6.0 to 9.0 unless the domestic sewage treatment works demonstrate that:

- (i) Inorganic chemicals are not added to the waste stream as part of the treatment process.
- (ii) Contributions from industrial sources do not cause the pH of the effluent to be less than 6.0 or greater than 9.0.

(d) In addition to the data required by 2-17.3.2, NPAs/NCAs shall include at least the following information:

- (1) A description of the nature of the discharge.
  - (2) The location of the discharge.
  - (3) The characteristics of the discharge, including volume and a quantitative analysis of the effluent that includes analysis of all parameters for which there is a standard listed in Appendix 3-2C and analysis of all toxic pollutants that may be in the effluent. All sampling and analytical methods shall be in accordance with the methods approved by USEPA in 40 CFR 136.
  - (4) A description of the mixing zone required for all substances that do not meet the applicable standards presented in Appendix 3-2C at the point of discharge. The mixing zone shall be determined using methods described in the NPA/NCA and consistent with USEPA guidelines, and shall be based on the conditions known to exist that would require the largest mixing zone. The analysis of the mixing zone shall include a calculation of the zone of initial dilution.
  - (5) A description of all measures that will be taken to minimize the amount of wastes produced that result in the discharge.
  - (6) An assessment of the effects of the discharge on the receiving water and the biota, to include a determination of unreasonable degradation and the control measures necessary to prevent unreasonable degradation.
  - (7) A description of all treatment methods used and the method of disposal of all treatment by-products not otherwise discharged [e.g., sewage sludge, see Section 3-6.5.7(d)] and the effects of such disposal.
  - (8) A description of the methods that will be used to eliminate or reduce the introduction of toxic pollutants or other pollutants that may disrupt treatment processes into the waste stream. At a minimum, the controls shall achieve the standards given in Section 3-2.7.1(e)(2) and (e)(4).
- (e) Alternatives to the treatment levels cited in Section 3-2.7.1(c) may be allowable if USAKA can demonstrate through the DEP process (Section 2-17.3) that all of the relevant criteria listed below will be achieved and that the application of higher treatment levels is not justified on the basis of environmental benefit; costs; protection of public health and safety; technological, operational, or physical constraints; or secondary environmental risk created by their application. Alternative treatment levels or pretreatment standards shall not be in effect until such time as they are documented in a final DEP.



**[3-2.7.1(e)]**

(1) The proposed discharge alone or in combination with other discharges will not result in exceeding the water quality standards presented in Appendix 3-2C after taking into consideration any mixing zone for the discharge.

(2) Indirect sources associated with the discharge will be controlled to the extent necessary so that they will not:

(i) Interfere with the proper operation of the treatment facilities, including the future beneficial uses of biosolids.

(ii) Create a hazard of fire or explosion.

(iii) Cause corrosive structural damage to the treatment facilities.

(iv) Pass through the treatment facilities untreated.

(3) A balanced indigenous population of aquatic life will be maintained outside the zone of initial dilution.

(4) Introduction of toxic pollutants into the waste stream will be reduced to the maximum extent possible.

(5) The wastewater collection, treatment, and disposal system will be properly operated and maintained at all times.

(6) The general criteria for water quality in Section 3-2.6 will be achieved within the part of the mixing zone that is not included in the zone of initial dilution and it has been determined that the mixing zone is of such a nature that it will not significantly impair the uses designated in Section 3-2.4.1 for the receiving water.

**3-2.7.2 Reef Protection and Dredging, Quarrying, and Discharge of Dredged or Fill Materials**

To ensure that damage to the reef areas is minimized and to prevent harm to the environment, including water areas, USAKA shall, before taking any action that might adversely affect the reef areas of USAKA, conduct the appropriate environmental analysis of its proposed action consistent with these Standards and the Compact.

(a) No dredge and fill shall occur on USAKA unless documented in an appropriate NEPA document.

(b) No project involving dredging, quarrying, or discharge of dredged or fill materials shall be undertaken unless documented in a final DEP. All NCAs/NPAs shall demonstrate compliance with the criteria listed in Sections 3-2.7.2(b)(1) through (6) below and, at a minimum, include the relevant information described in Sections 2-17.3.2 and 3-2.7.1(e)

- (1) The area affected by the proposed activity will be minimized to the greatest extent practicable.
  - (2) The proposed activity is consistent with the water quality management plan prepared according to Section 3-2.5.1 and will not result in a violation of a water quality standard listed in Appendix 3-2C, except as may be allowed within a mixing zone.
  - (3) All adverse effects on threatened or endangered species or critical habitats described in Section 3-4 are eliminated or mitigated to the satisfaction of the Appropriate Agencies.
  - (4) The proposed activity will not result in the loss or destruction of significant cultural resources of the RMI as described in Section 3-7.
  - (5) All reasonable measures will be taken to mitigate all adverse effects associated with the proposed activity.
  - (6) There are no practicable alternatives to the proposed discharge that would have a less adverse effect on the environment.
- (c) Routine maintenance dredging and filling projects may be authorized in a programmatic NCA/NPA and DEP.

### **3-2.7.3 Nonpoint-Source Discharges**

All sources of nonpoint-source pollution shall be controlled through the application of the management practices identified in the water quality management plan described in Section 3-2.5.1.

### **3-2.7.4 Discharge of Ballast Water**

All vessels containing ballast water taken on outside the territorial waters of the RMI and intending to discharge ballast water in RMI waters shall off-load ballast water outside of 12 miles from shore and 2 times the volume of the tank of clean sea water shall be taken on and discharged immediately prior to entry within 12 miles of shore. Discharge of ballast from the fuel tanks of water craft within waters of the RMI shall be minimized and only in accordance with these Standards.

### **3-2.7.5 (Reserved)**

### **3-2.7.6 Reclaimed Water**

- (a) Reclaimed water is that water which has undergone wastewater treatment and is reused as opposed to being discharged. All reclaimed water shall:
- (1) Be free of pathogens at measurable levels.

[3-2.7.6(a)]

(2) Be clear, odorless, and free of substances that are toxic upon ingestion or cause irritation to humans, animals, and plants.

(3) Meet criteria for quality and monitoring as presented in Appendix 3-2J.

(i) USAKA shall monitor annually for any substance listed in Appendix 3-2K that has been measured to exceed either 50% of an MCL or wastewater effluent limitations through analysis conducted in accordance with the DEP(s) governing point sources and drinking water. If levels rise, investigate the sources by further analysis and eliminate the source.

(A) Analysis for chemical compounds listed in Appendix 3-2K, Table 3-2K.1 (grouped by USEPA method), shall be in accordance with the methods specified in 40 CFR 141.24(e).

(B) Analysis for chemical compounds listed in Appendix 3-2K, Table 3-2K.2, shall be in accordance with the methods specified in 40 CFR 141.23(k), 40 CFR 143.4(b), or with methods specified in the current edition of *Standard Methods for the Examination of Water and Wastewater*.

(ii) Analysis of fecal coliforms shall be in accordance with the quantitative methods listed in 40 CFR Part 141.21(f)(5). USAKA may conduct analysis for *E. coli* in lieu of fecal coliform in accordance with 40 CFR Part 141.21(f)(6),(i),(ii),(iii), or (iv).

(4) Be derived from the secondary wastewater treatment effluent or from a source of equivalent or greater quality which has been appropriately disinfected and filtered, or which has received equivalent treatment, and be reasonably protected against degradation.

(b) Controls shall be employed to ensure acceptable reclaimed water quality and to protect public health. Such controls shall include but not be limited to:

(1) Appropriate filtration and disinfection or equivalent treatment of the secondary wastewater effluent.

(2) (Reserved)

(3) Diverting secondary wastewater effluent from the reclaimed water system to the lagoon if disruptions due to toxic substances or equipment failure occur in the wastewater treatment process.

(4) Reactivating the salt water system if severe, prolonged deterioration of the secondary wastewater effluent occurs resulting in exceedance of effluent standards contained in the DEP for point source discharge from the Kwajalein wastewater treatment plant.

- (5) Color coding reclaimed water and outside potable water outlets at end user locations. Placard the nonpotable outlets with language identifying nonpotability in Marshallese and English.
- (c) Suitable educational material shall be provided to reclaimed water users.
- (d) Public notification shall be provided in the event of noncompliance with the reclaimed water standards in Appendix 3-2J in accordance with Section 2-7.3.2(b).
- (e) Operation of the reclaimed water system shall be documented in a DEP as required in Section 2-17.3.1(q). Allowed uses of reclaimed water will be as specified in a final DEP.

### **3-2.8 PROHIBITIONS**

#### **3-2.8.1 Class AA Coastal Waters**

No mixing zone or point source discharges shall be authorized in Class AA coastal waters [Section 3-2.4.1(a)(3)]

#### **3-2.8.2 Class A Coastal Waters**

No mixing zones shall be authorized in Class A coastal waters [Section 3-2.4.1(b)(2)].

#### **3-2.8.3 Groundwater**

USAKA operations shall not degrade Class I or II groundwaters in a way that results in an exceedence of primary or secondary groundwater standards (Appendix 3-2D, Tables 3-2D.1 and 3-2D.2) or causes an increased concentration of substance for which there is a primary or secondary standard, unless an exception has been granted by the Commander, USAKA [Section 3-2.6.2(a)].

#### **3-2.8.4 Discharges of Oil**

(a) USAKA shall not discharge or cause or permit to be discharged into or upon the waters of the RMI or adjoining shorelines any oil in such quantities as has been determined may be harmful to the public health and safety, including discharges of oil that:

- (1) Violate applicable water quality standards, or
- (2) Cause a film or sheen on, or discoloration of, the surface of such water or resources, or

**[3-2.8.4(a)]**

(3) Cause a sludge or emulsion to be deposited beneath the surface of the water or on adjoining shorelines except as may be permitted in the contiguous zone or seaward under MARPOL, 73/78.

(b) Discharges of oil from a properly functioning engine of a vessel are not deemed harmful, but discharges of such oil accumulated in a vessel's bilges while the vessel is in the lagoon are prohibited.

(c) Addition of dispersants or emulsifiers to oil that is to be discharged that would result in circumventing the requirements of these Standards is prohibited.

(d) Discharges of oil in connection with research, demonstration projects, or studies relating to the prevention, control, or abatement of oil pollution may be allowed subject to submittal of a DEP (Section 2-17.3).

(e) Every person in charge of a vessel or of an onshore or offshore facility, as soon as he or she has knowledge of discharge of oil from such vessel or facility in violation of the marine water quality standards listed above and in Appendix 3-2C of this section, shall immediately notify USAKA.

**3-2.8.5 Dredged or Fill Material**

Dredging, quarrying, discharge of dredged or fill materials into waters of the RMI is prohibited unless documented in a final DEP [Section 3-2.7.2(b)].

**3-2.8.6 Control of Sewage from Vessels**

No vessel under the control of, or under contract to, USAKA shall dispose of sewage (blackwater) or discharge from a marine sanitation device in the territorial waters of the RMI. No vessel shall dispose of sewage (blackwater) or discharge from a marine sanitation device in USAKA controlled waters.

**3-2.8.7 Reclaimed Water**

Reclaimed water is prohibited for use in the following applications:

(a) Raw water source for potable water,

(b) Recharge of Class I groundwaters,

(c) Drinking, bathing, laundry, dish washing, and rinsing of scuba/snorkel equipment,

(d) Wading pools, sprinkler toys, and other items exposing children to direct contact with reclaimed water,

- (e) Air conditioner chillers, chiller blow-down units, and other air treatment units using water curtains (eg. spray paint booth),
- (f) Devices creating a jet spray in aerosol form,
- (g) Devices for indoor air filtration or forced blast which can produce aerosols.

### **3-2.8.8 Point Source Discharges**

Discharge or pollutants into the waters of the RMI from point sources is prohibited unless documented in a final DEP (Section 3-2.7.1).

## **3-2.9 TREATMENT OR CONTROL**

(Reserved)

### **3-2.10 STORAGE**

(Reserved)

### **3-2.11 DISPOSAL**

(Reserved)

## **3-2.12 SPECIAL REQUIREMENTS**

### **3-2.12.1 Water Quality Monitoring**

(a) All methods of sample collection, preservation, and analysis used to determine compliance with the water quality standards shall be in accordance with the standards specified in the current edition of *Standard Methods for the Examination of Water and Wastewater* or with methods specified by USEPA in 40 CFR 136 and Appendices 3-2F and 3-2G, as appropriate. Monitoring reports on wastewater discharge as described in a DEP (Section 2-17.3) shall be submitted to the Appropriate Agencies.

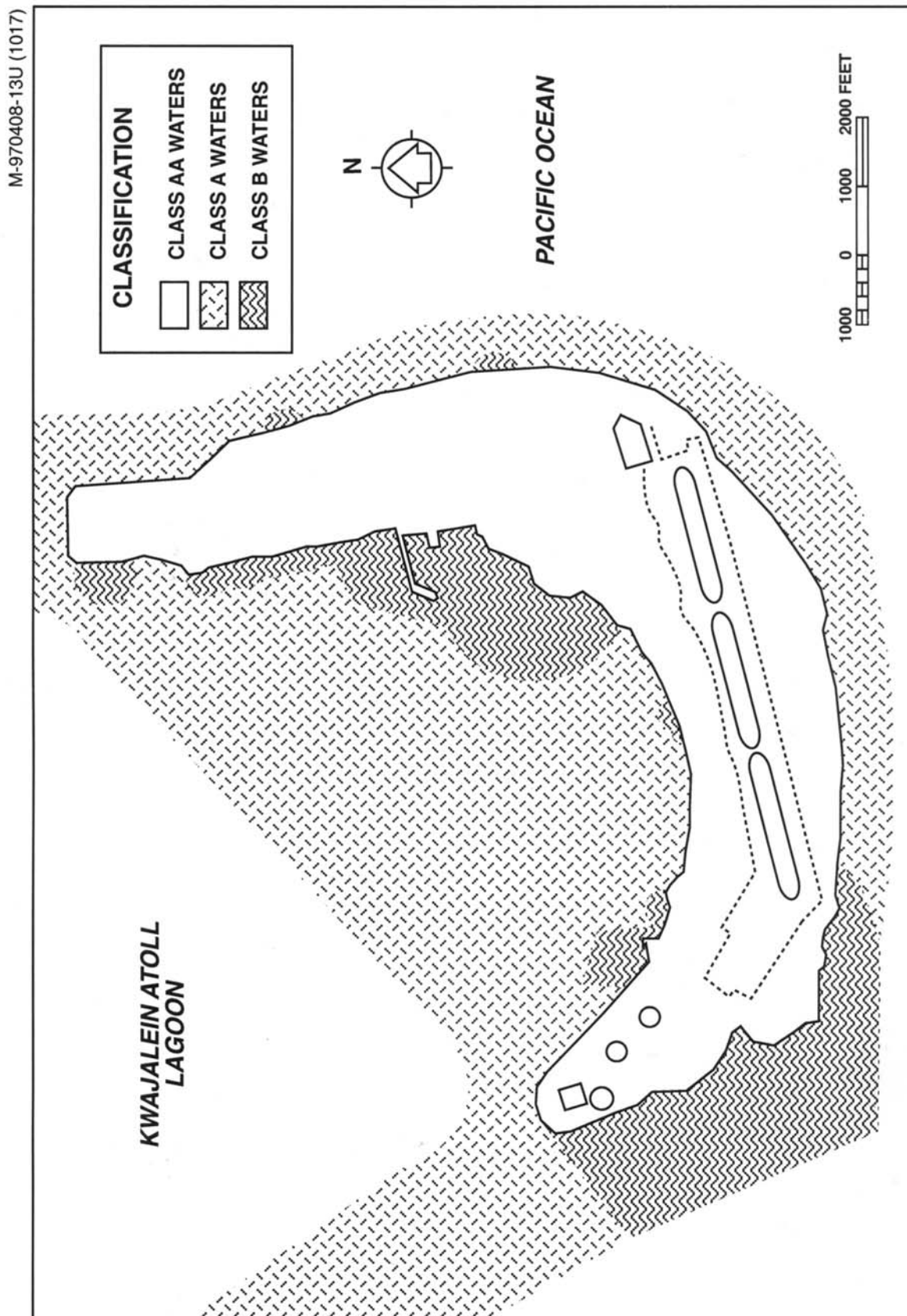
(b) USAKA personnel who are engaged in sample collection, preservation, and analysis used to determine compliance with the water quality standards shall have the level of knowledge required for conducting these activities in compliance with the provisions of the standards specified in Section 3-2.12.1(a), above, and referenced in Section 2-10.

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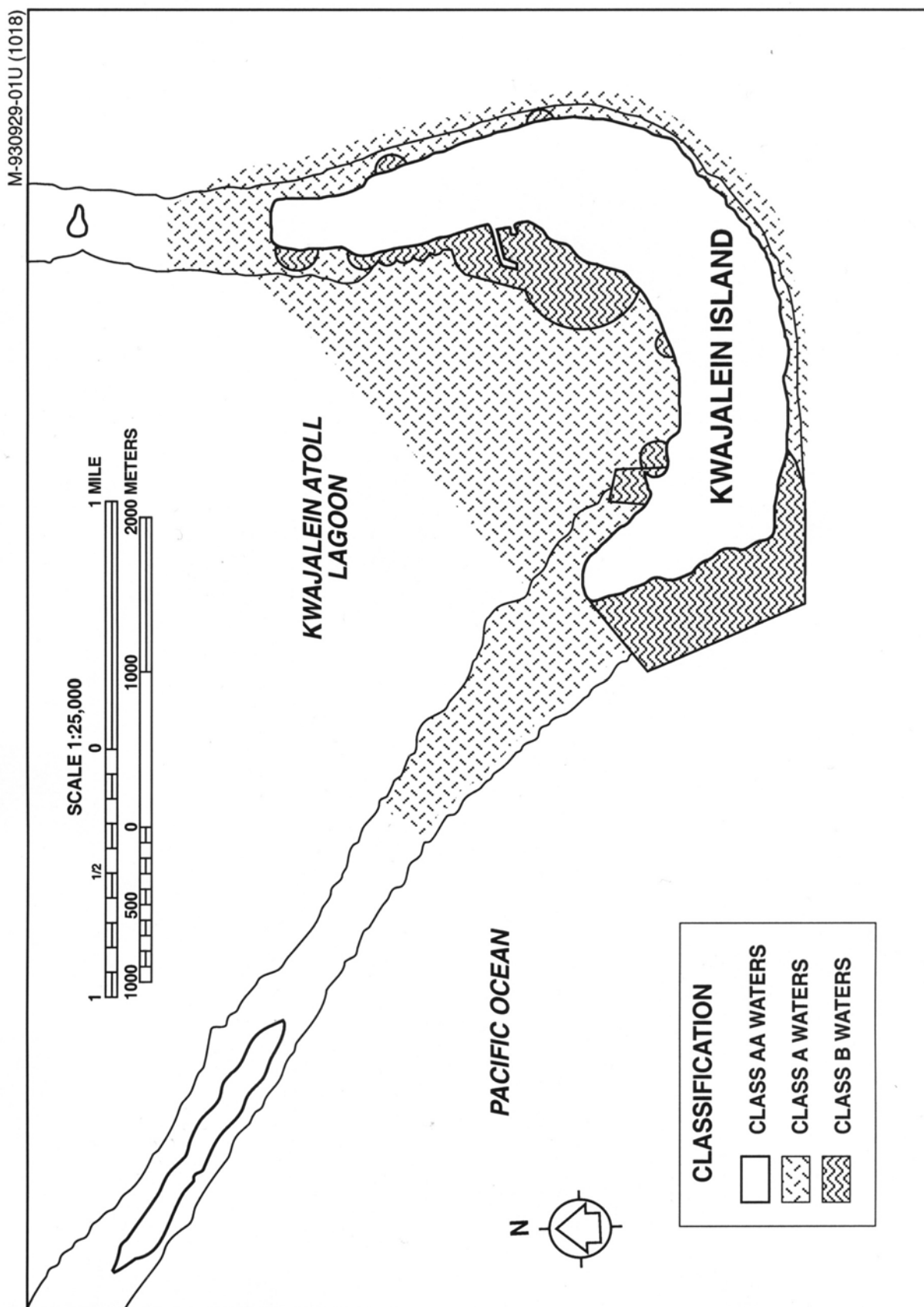
**APPENDIX 3-2A**  
**CLASSIFICATION OF COASTAL-WATER USES**



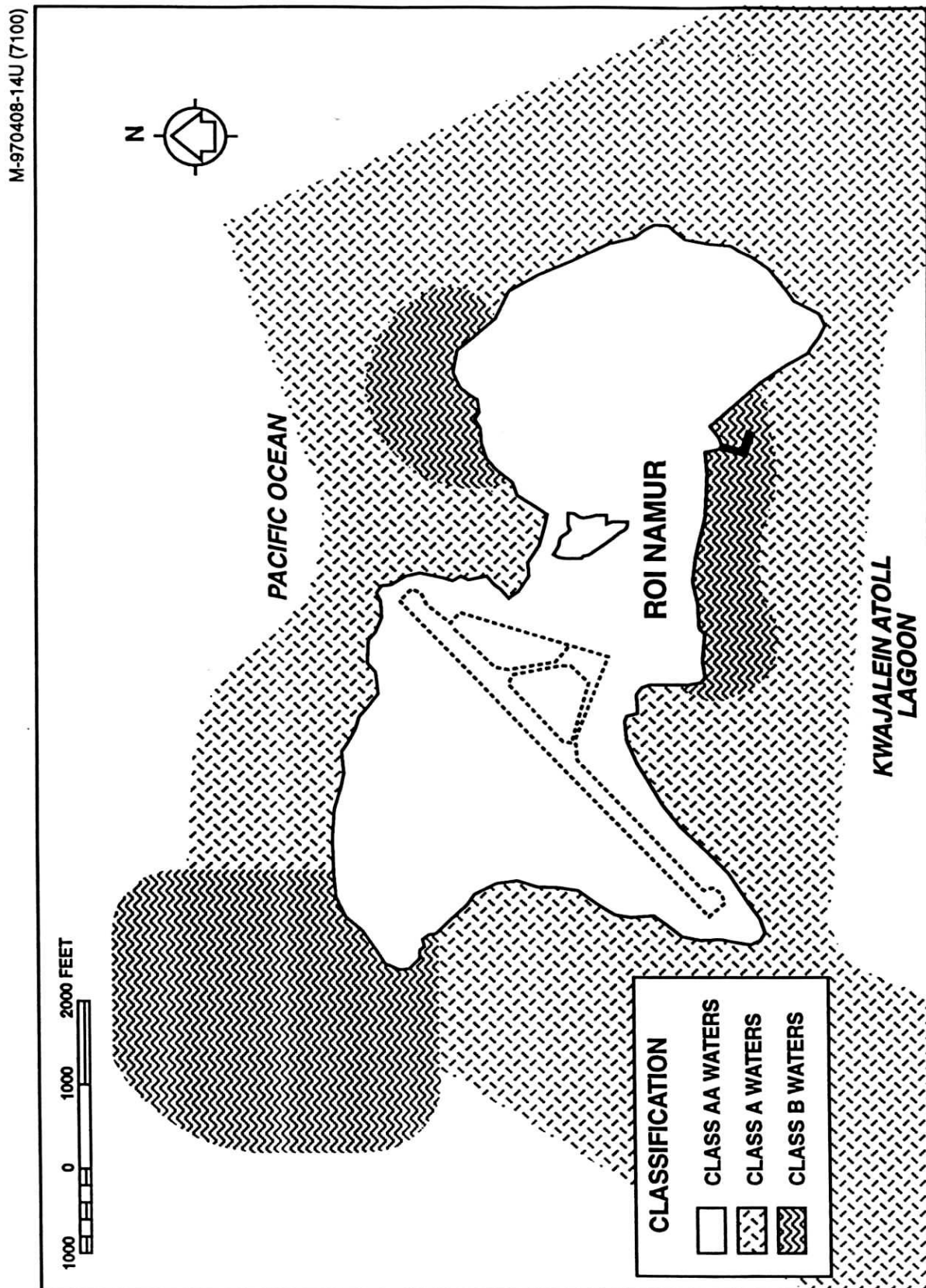
**FIGURE 3-2A.1**  
**KWAJALEIN:**  
**CLASSIFICATION OF COASTAL-WATER USE**



**FIGURE 3-2A.2**  
**KWAJALEIN VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**

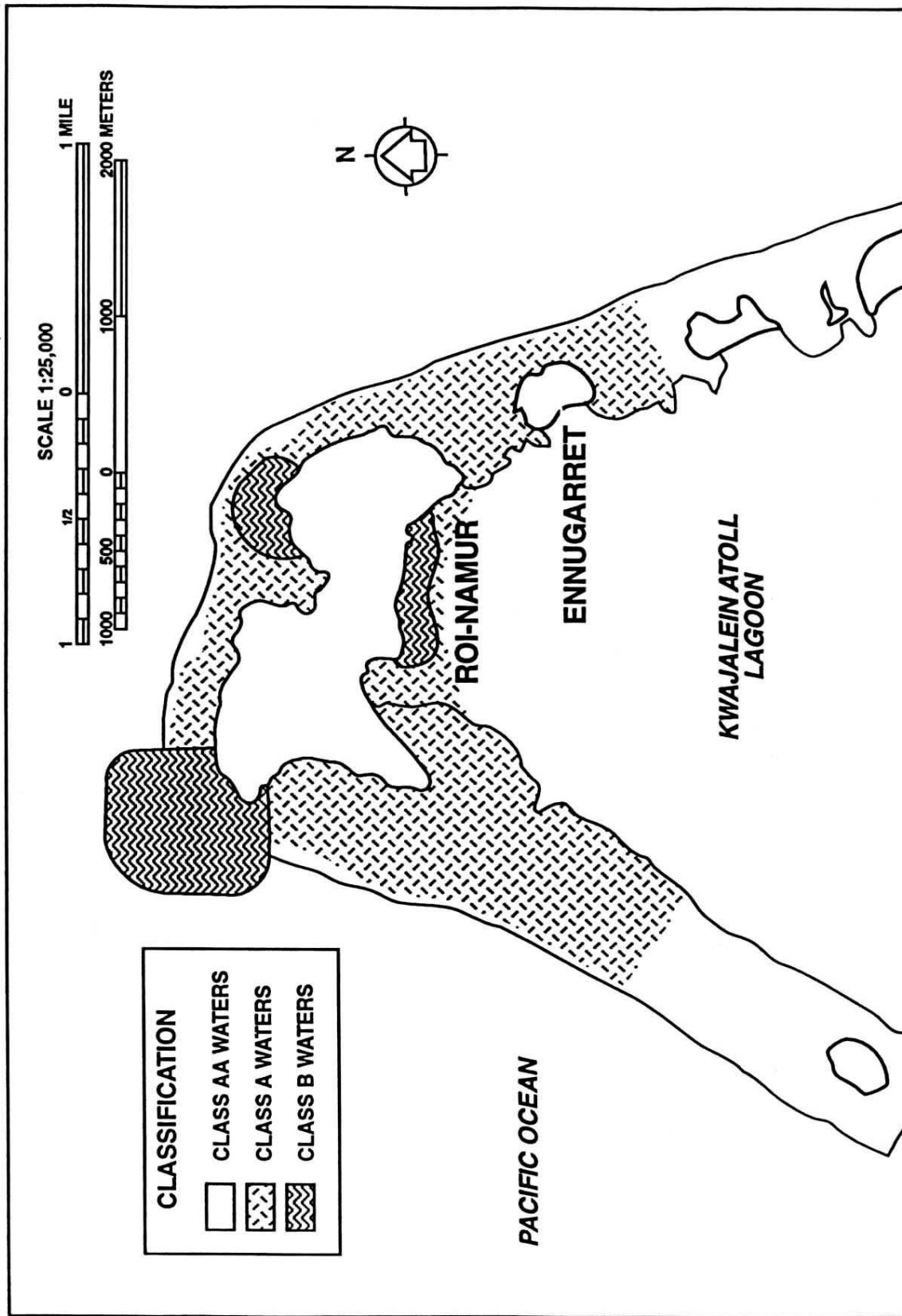


**FIGURE 3-2A.3**  
**ROI NAMUR:**  
**CLASSIFICATION OF COASTAL-WATER USE**

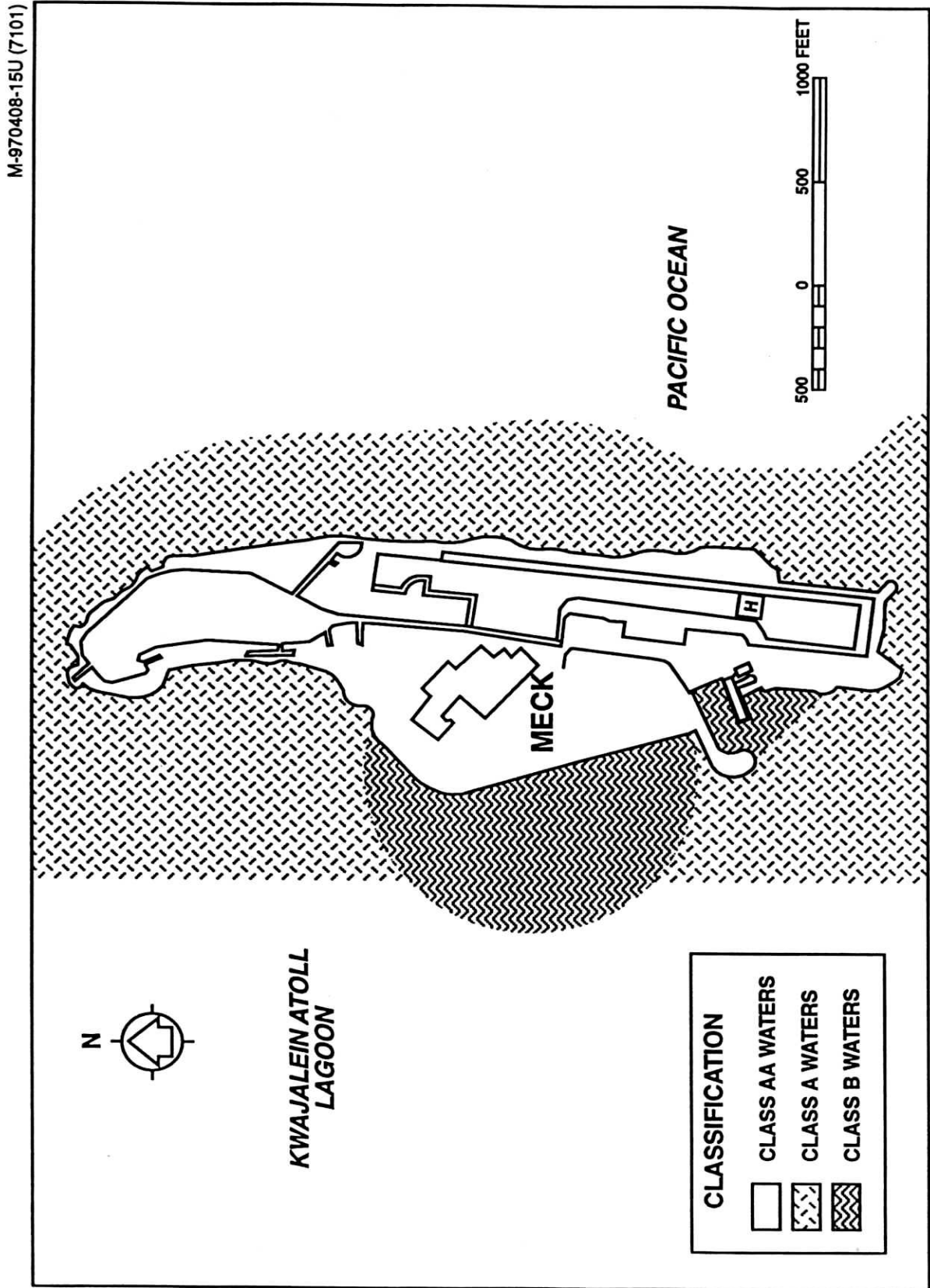


**FIGURE 3-2A.4**  
**ROI NAMUR AND ENNUGARRET VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**

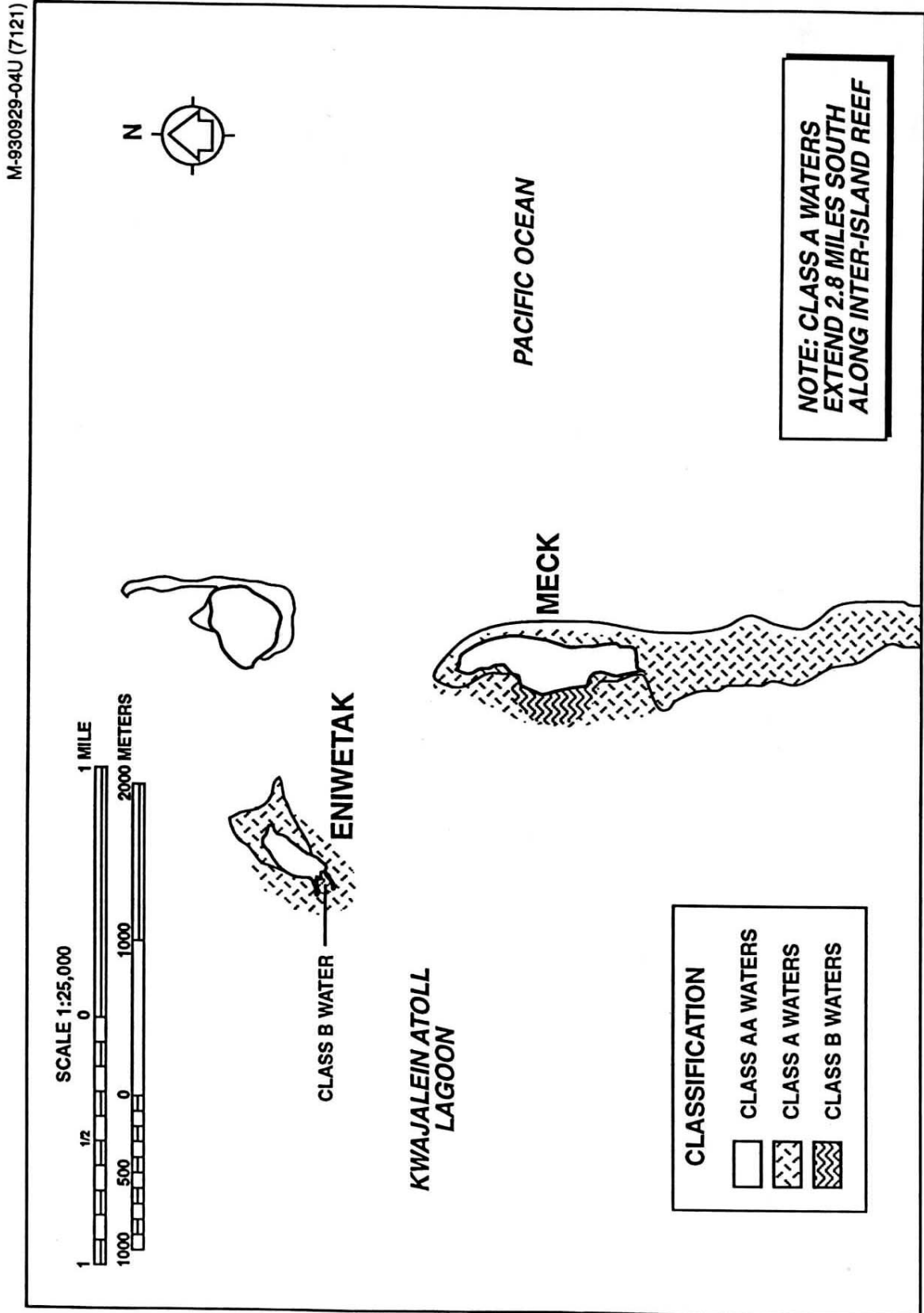
M-930929-25U (7097)



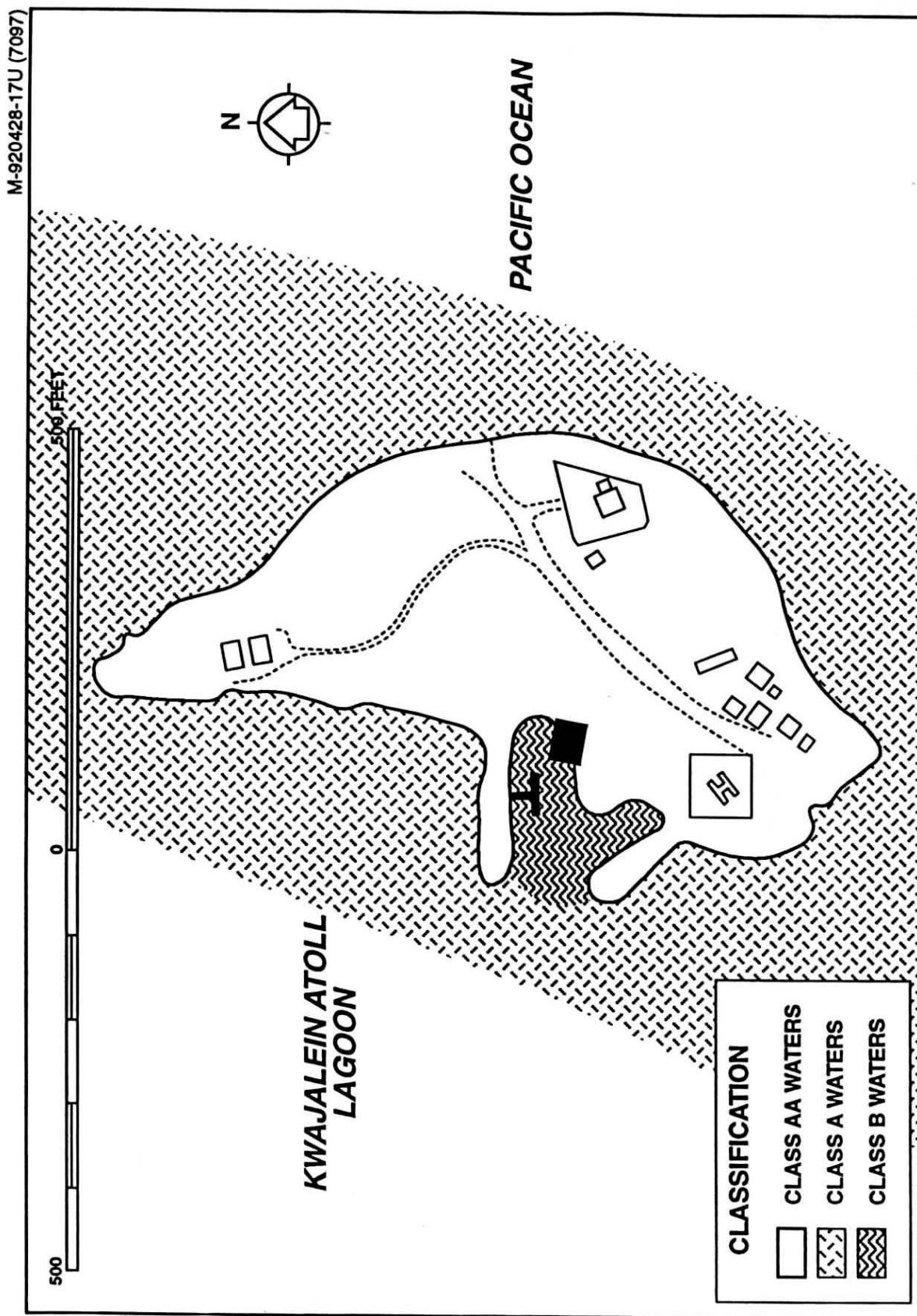
**FIGURE 3-2A.5**  
**MECK:**  
**CLASSIFICATION OF COASTAL-WATER USE**



**FIGURE 3-2A.6**  
**MECK AND ENIWETAK VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**

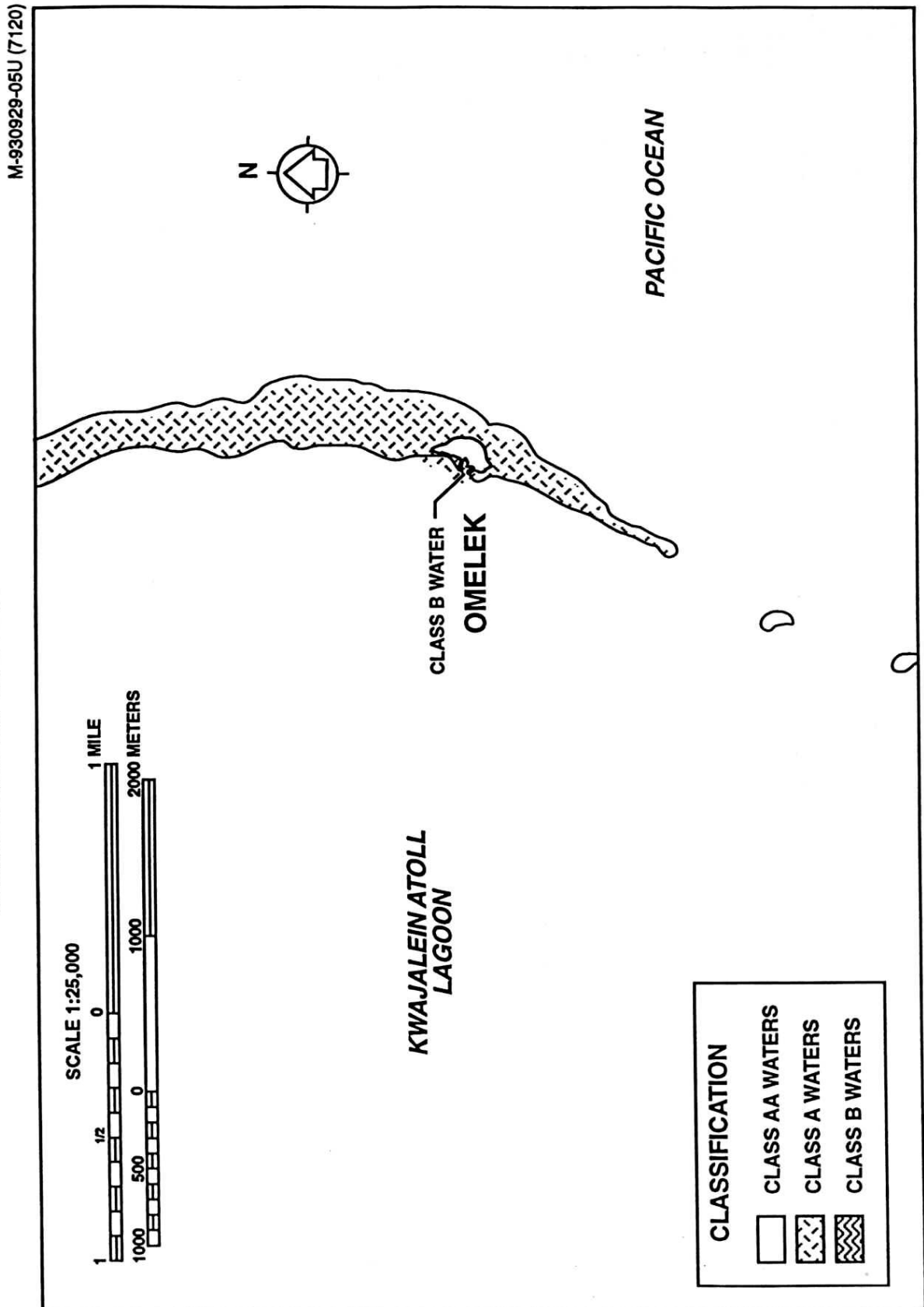


**FIGURE 3-2A.7**  
**OMELEK:**  
**CLASSIFICATION OF COASTAL-WATER USE**



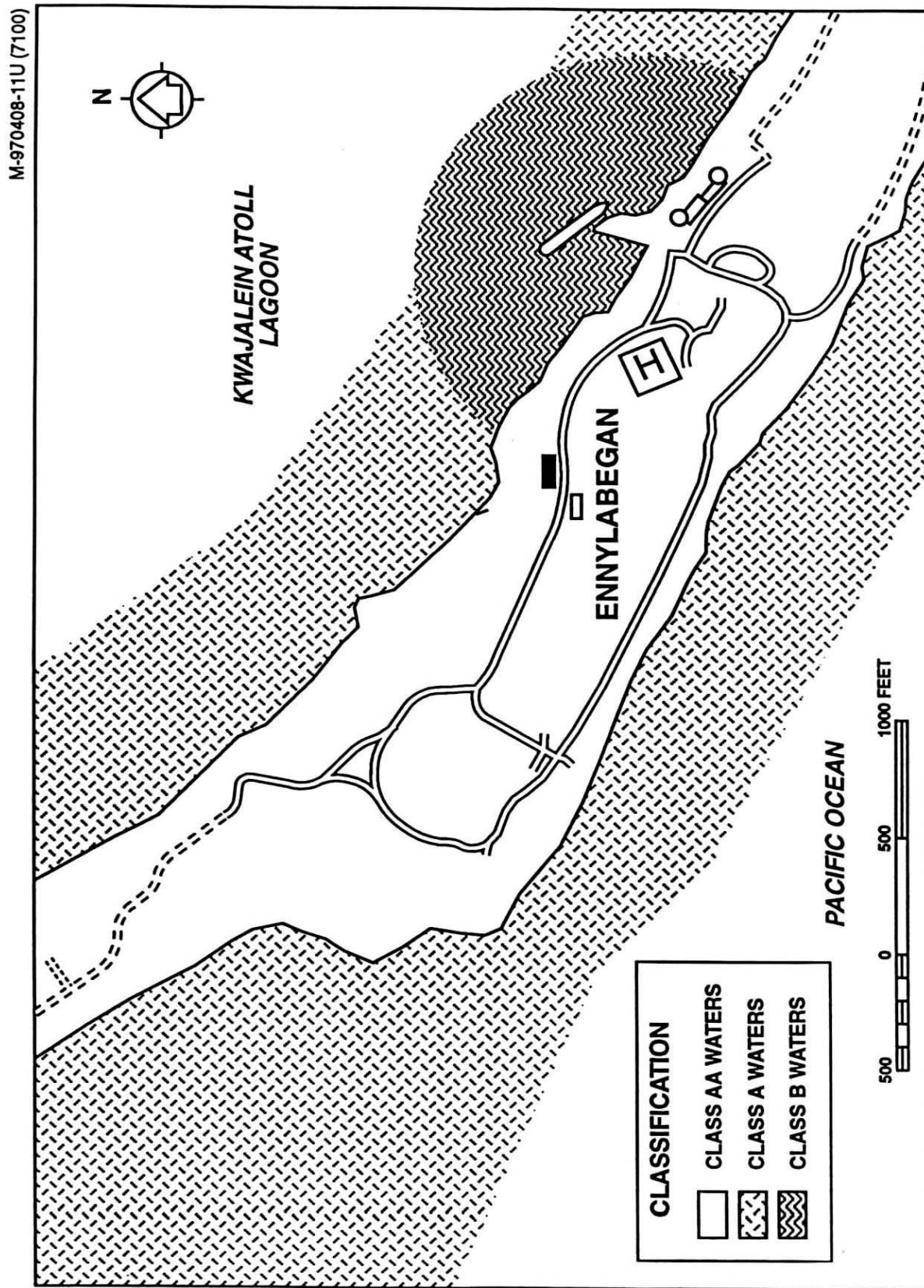


**FIGURE 3-2A.8**  
**OMELEK VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**

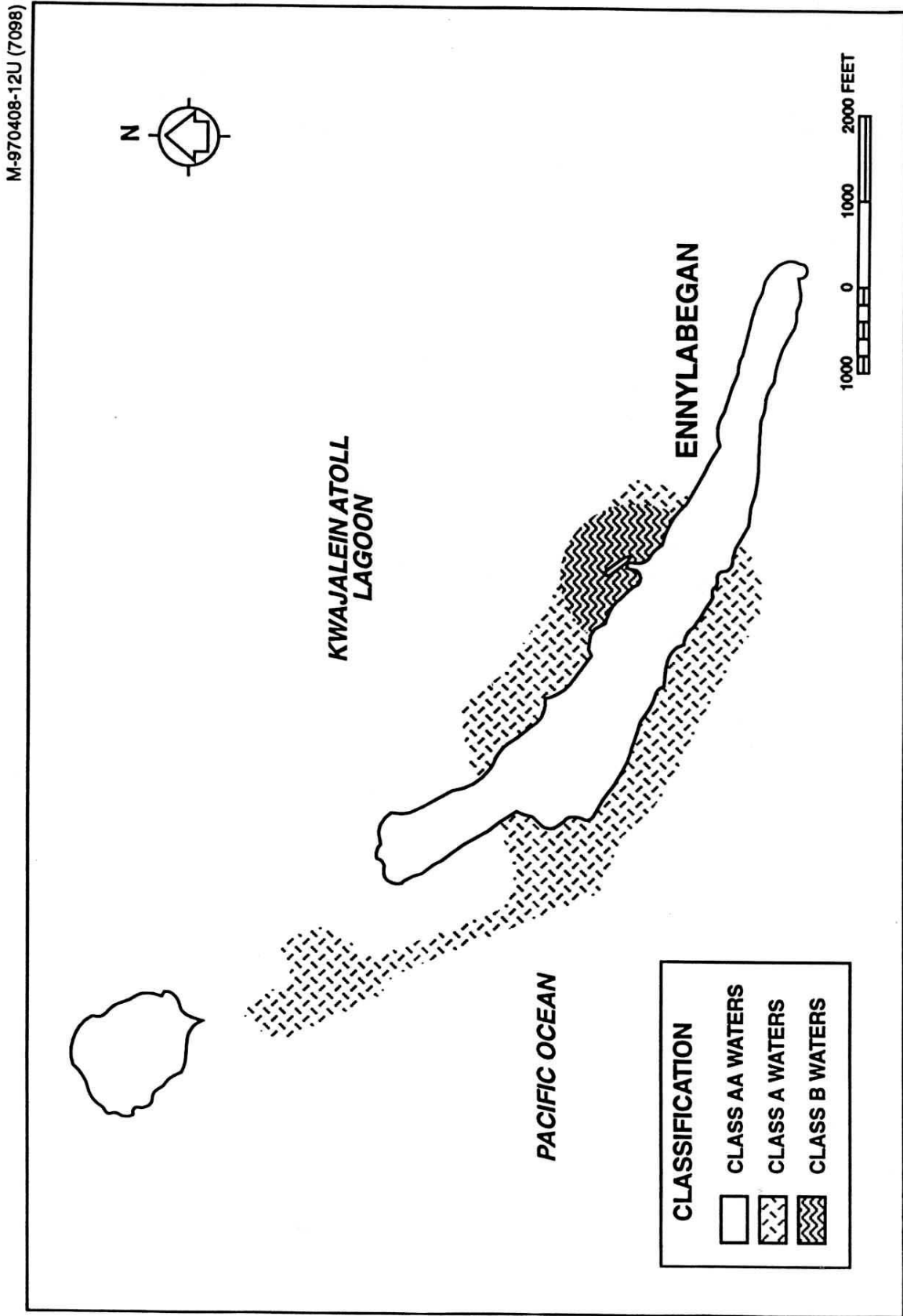




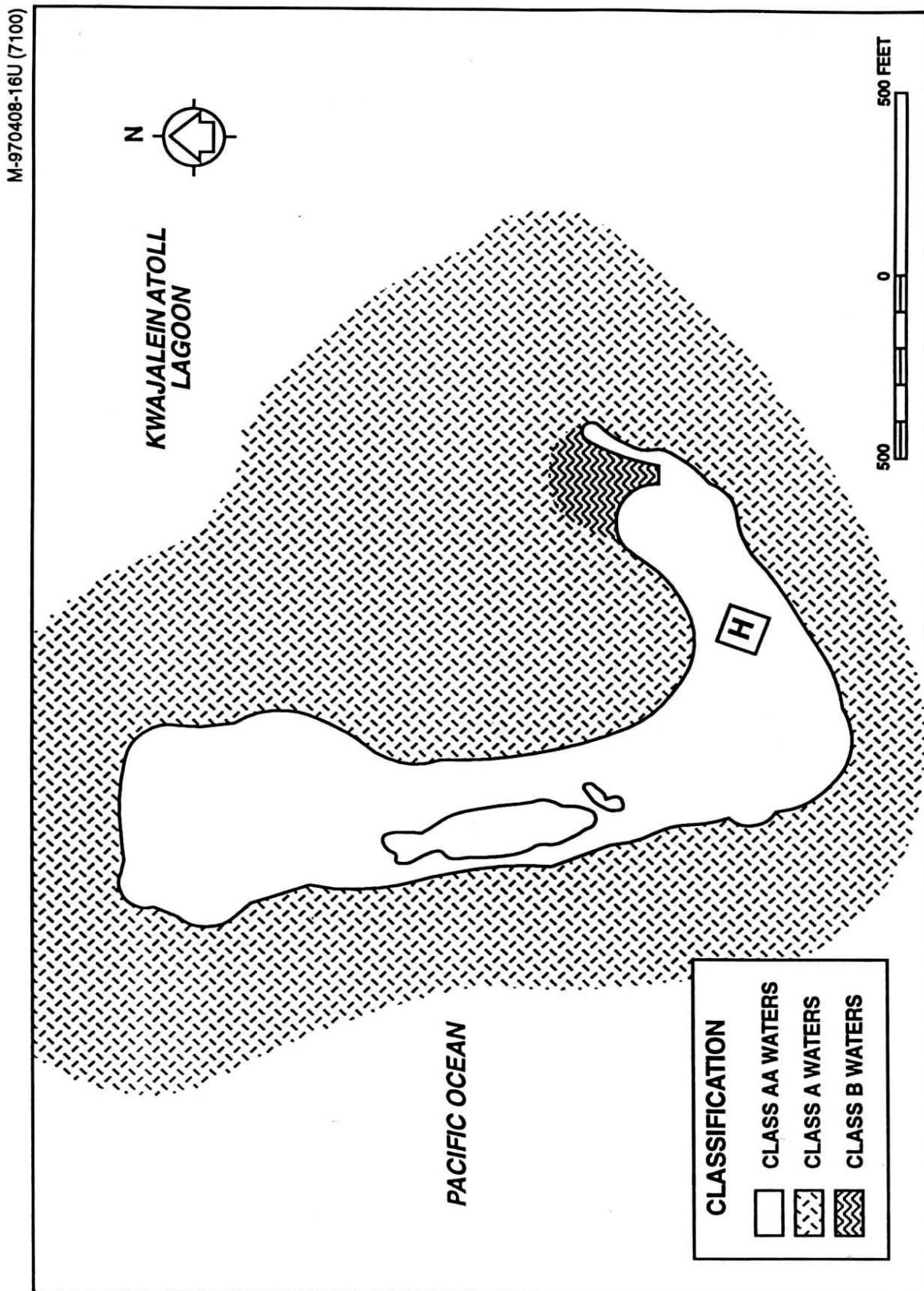
**FIGURE 3-2A.9**  
**ENNYLABEGAN:**  
**CLASSIFICATION OF COASTAL-WATER USE**



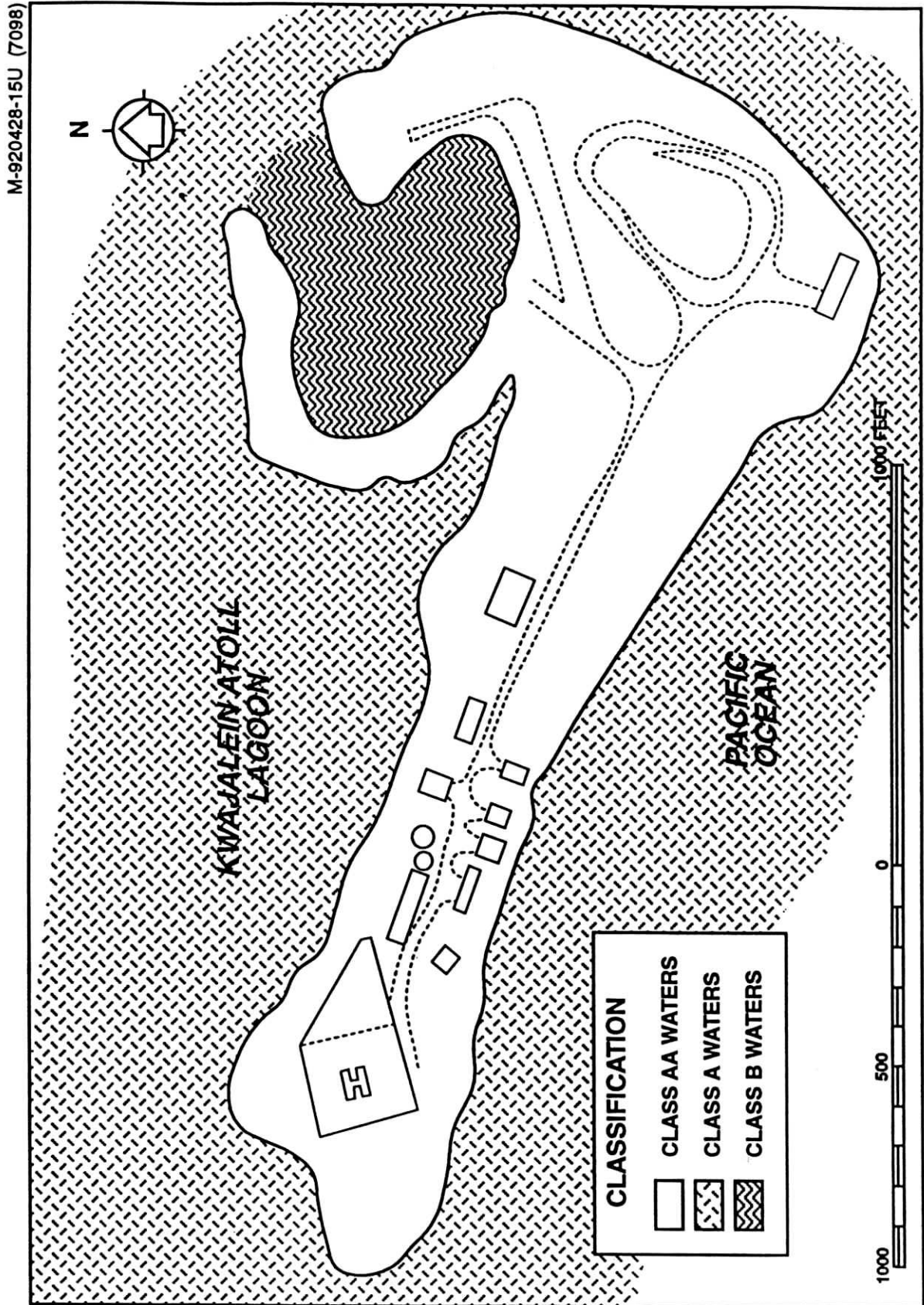
**FIGURE 3-2A.10**  
**ENNYLABEGAN ISLAND VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**



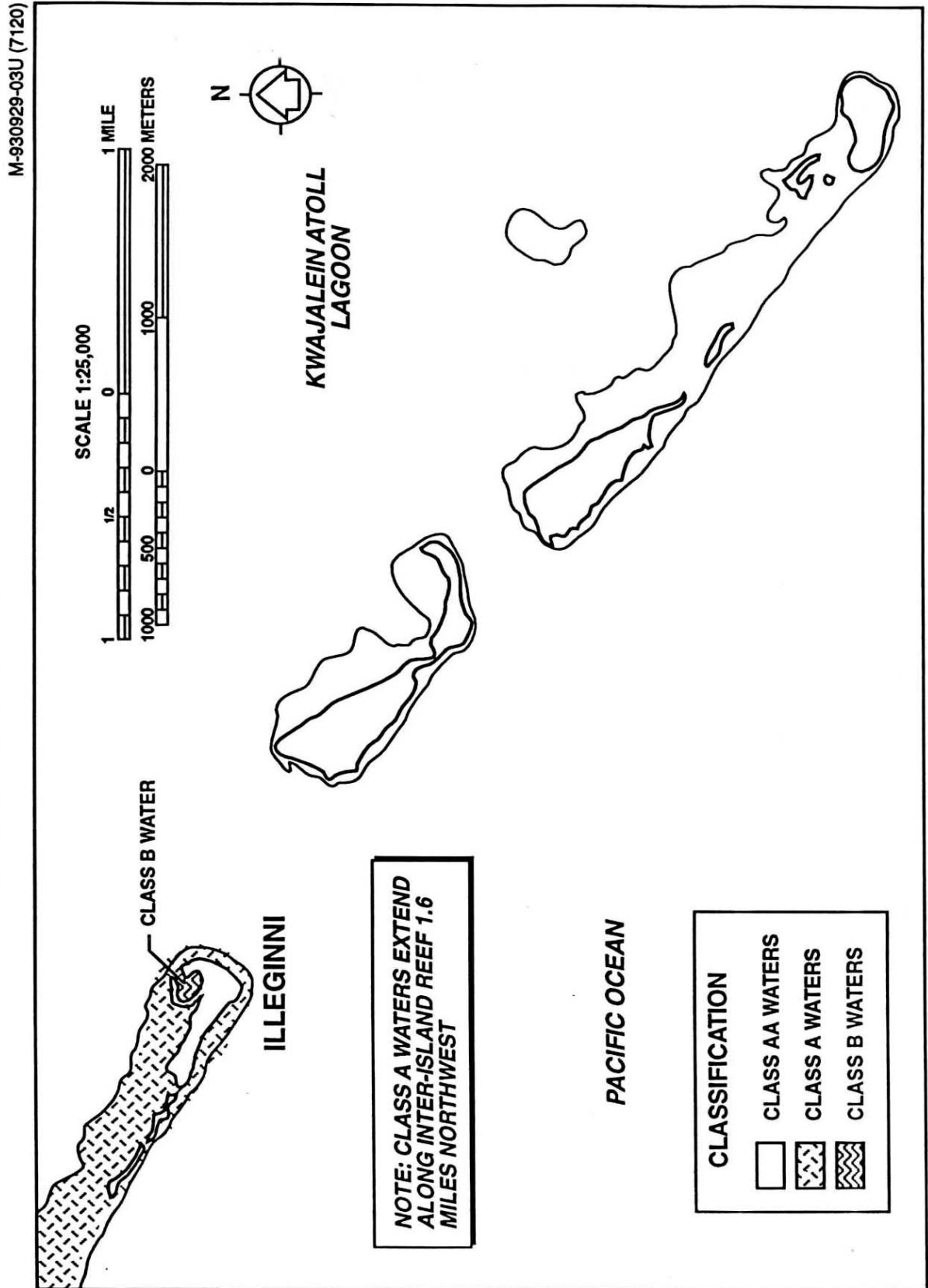
**FIGURE 3-2A.11**  
**LEGAN:**  
**CLASSIFICATION OF COASTAL-WATER USE**



**FIGURE 3-2A.12**  
**ILLEGINNI:**  
**CLASSIFICATION OF COASTAL-WATER USE**

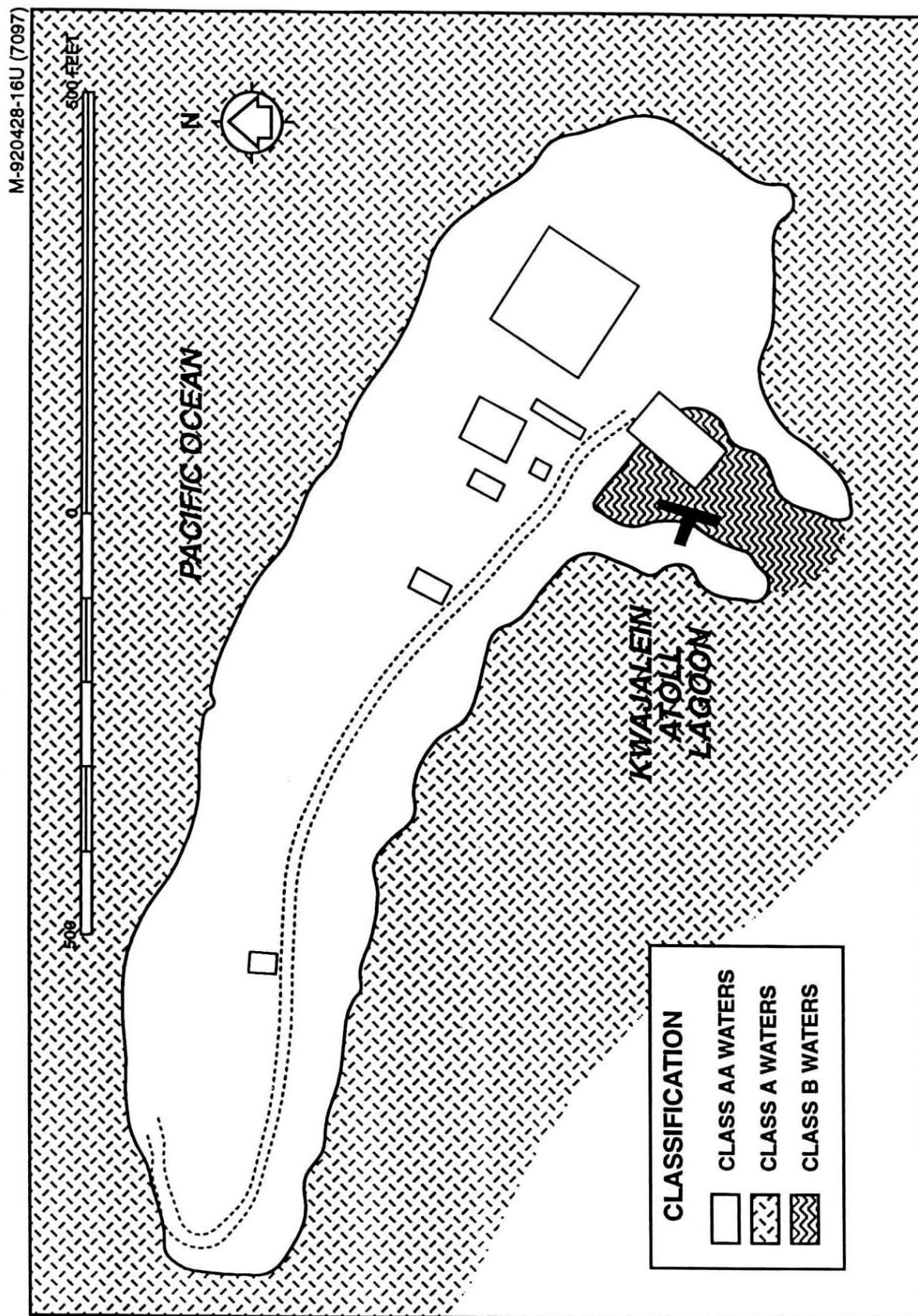


**FIGURE 3-2A.13**  
**ILLEGINNI VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**

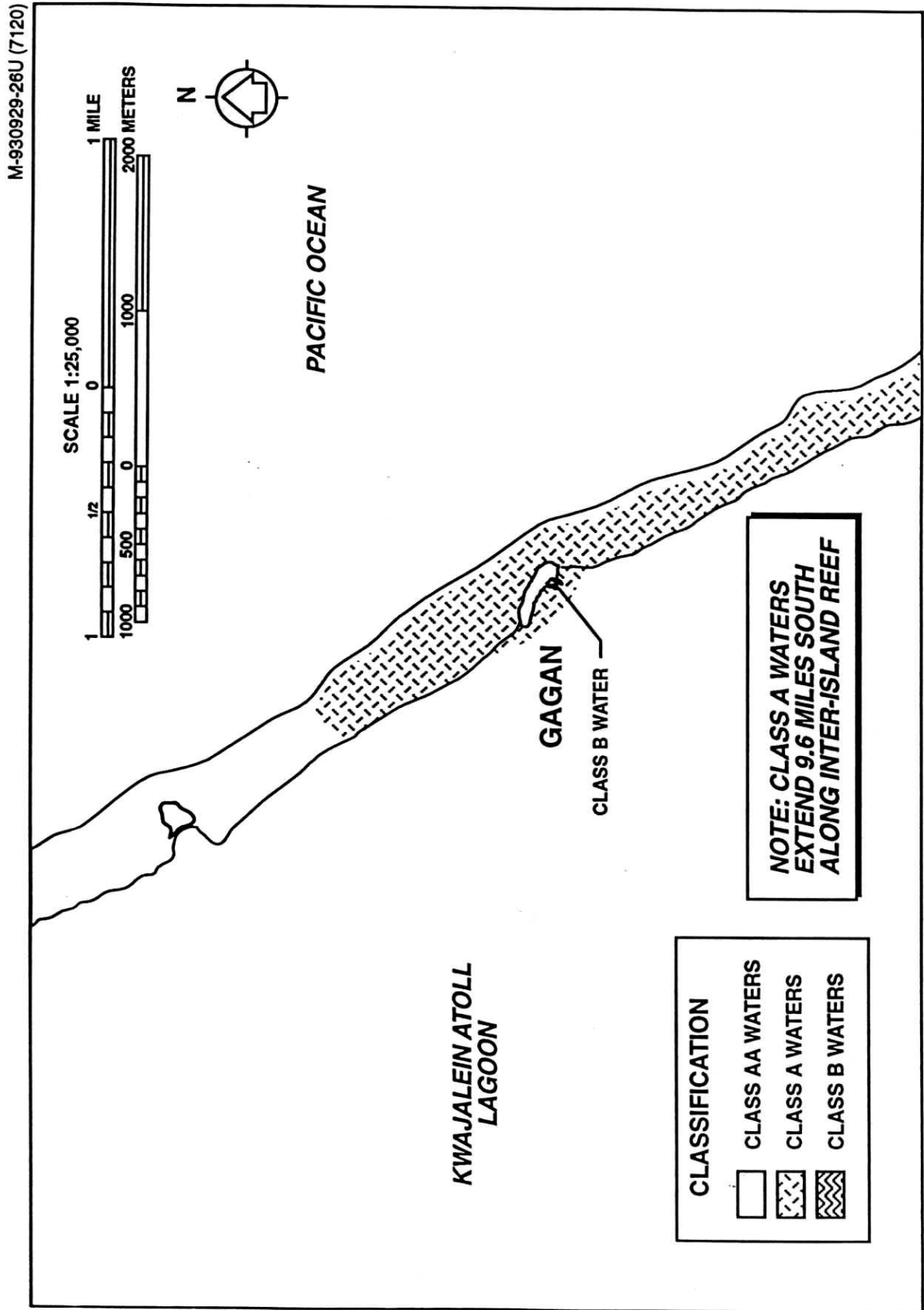




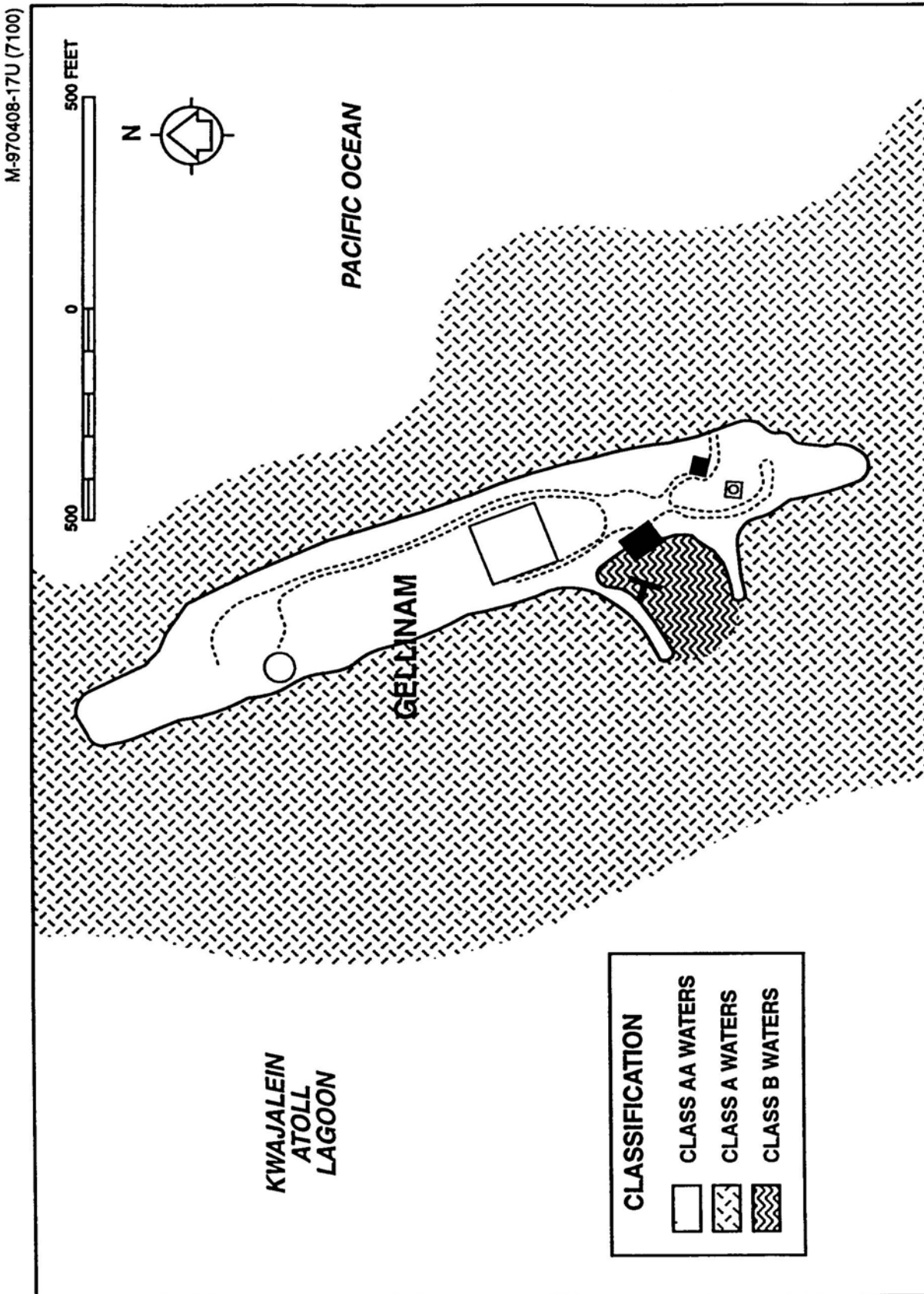
**FIGURE 3-2A.14**  
**GAGAN:**  
**CLASSIFICATION OF COASTAL-WATER USE**



**FIGURE 3-2A.15**  
**GAGAN VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**

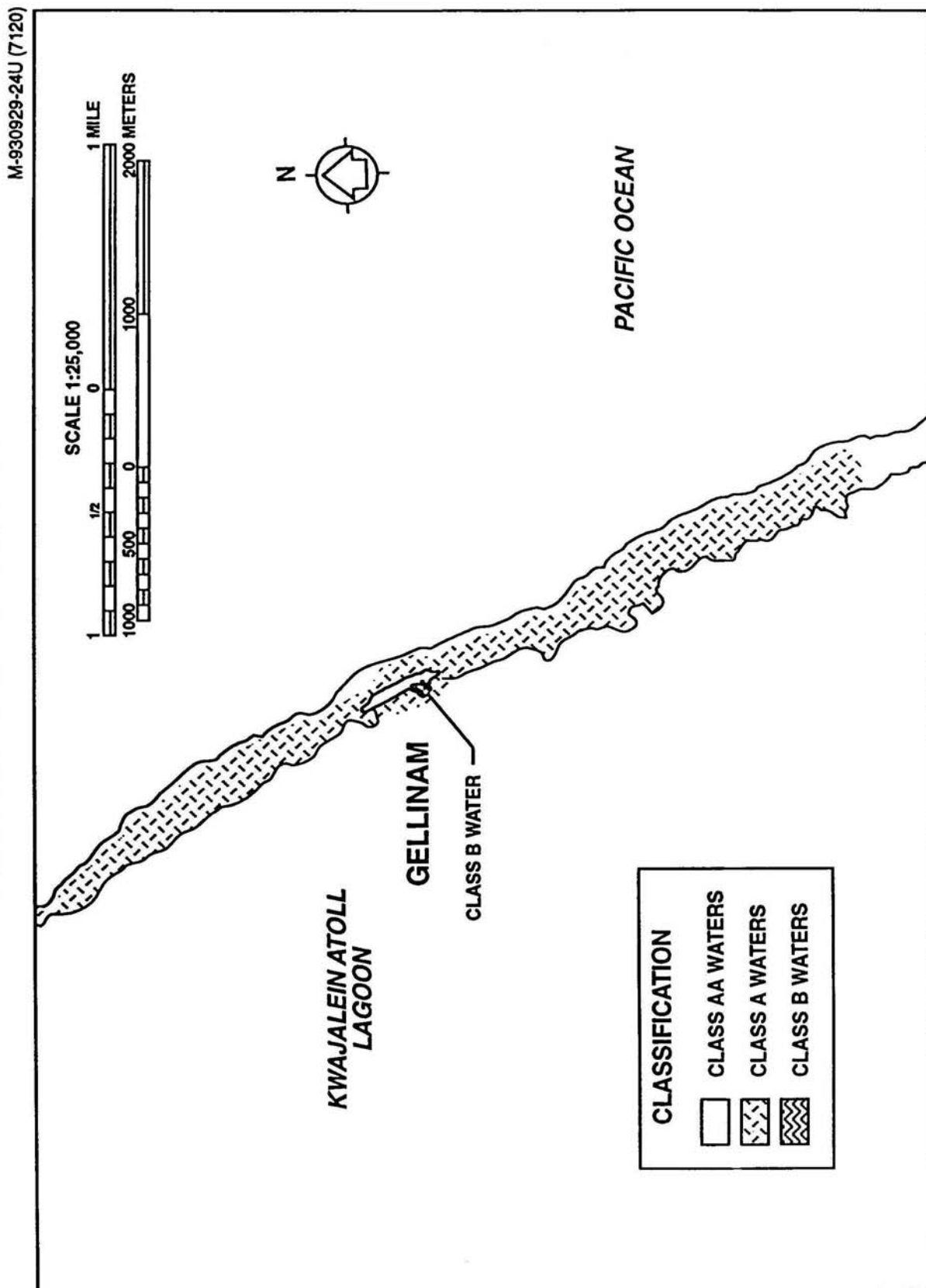


**FIGURE 3-2A.16**  
**GELLINAM:**  
**CLASSIFICATION OF COASTAL-WATER USE**

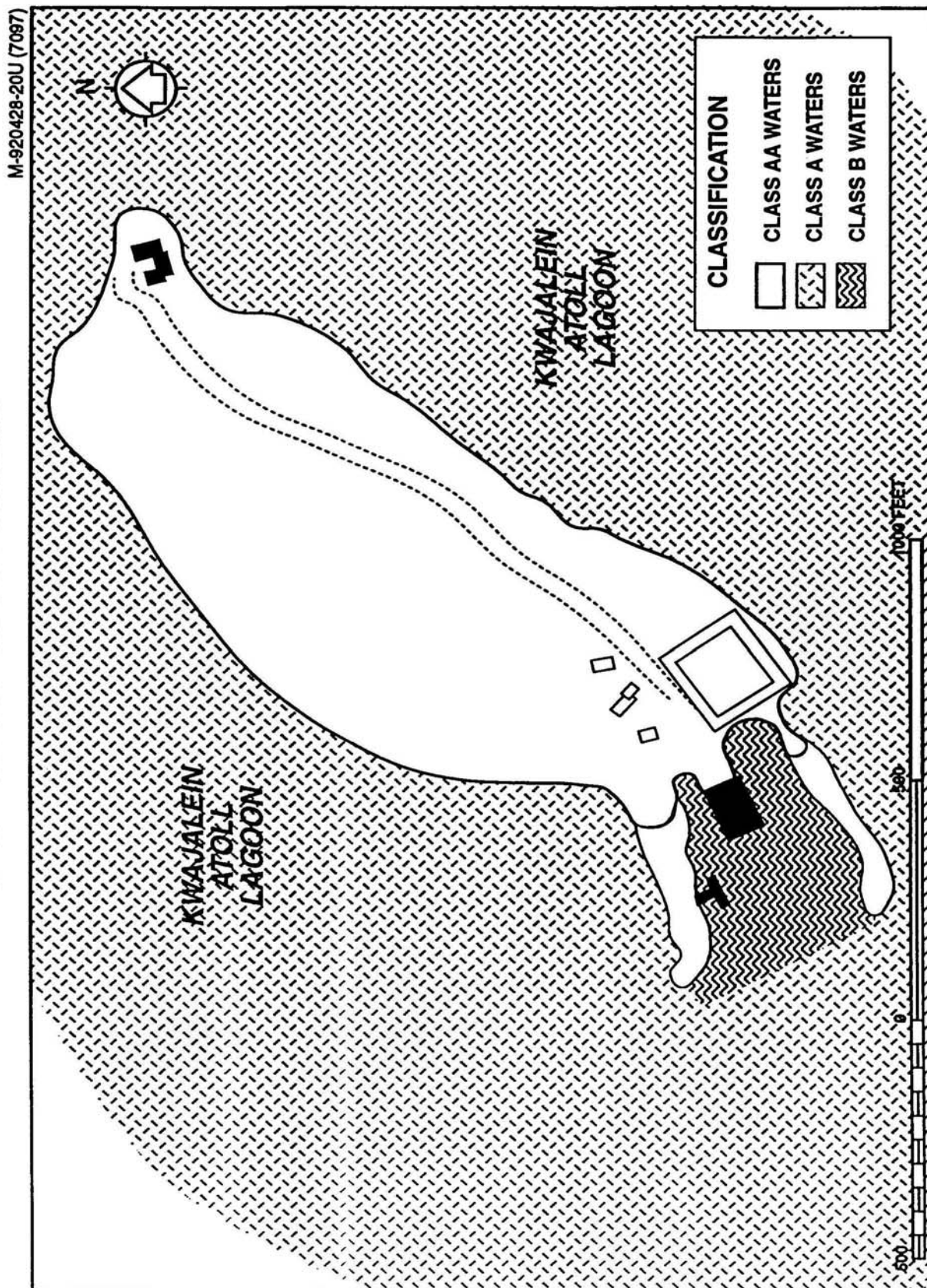




**FIGURE 3-2A.17**  
**GELLINAM VICINITY:**  
**CLASSIFICATION OF COASTAL-WATER USE**



**FIGURE 3-2A.18**  
**ENIWETAK:**  
**CLASSIFICATION OF COASTAL-WATER USE**

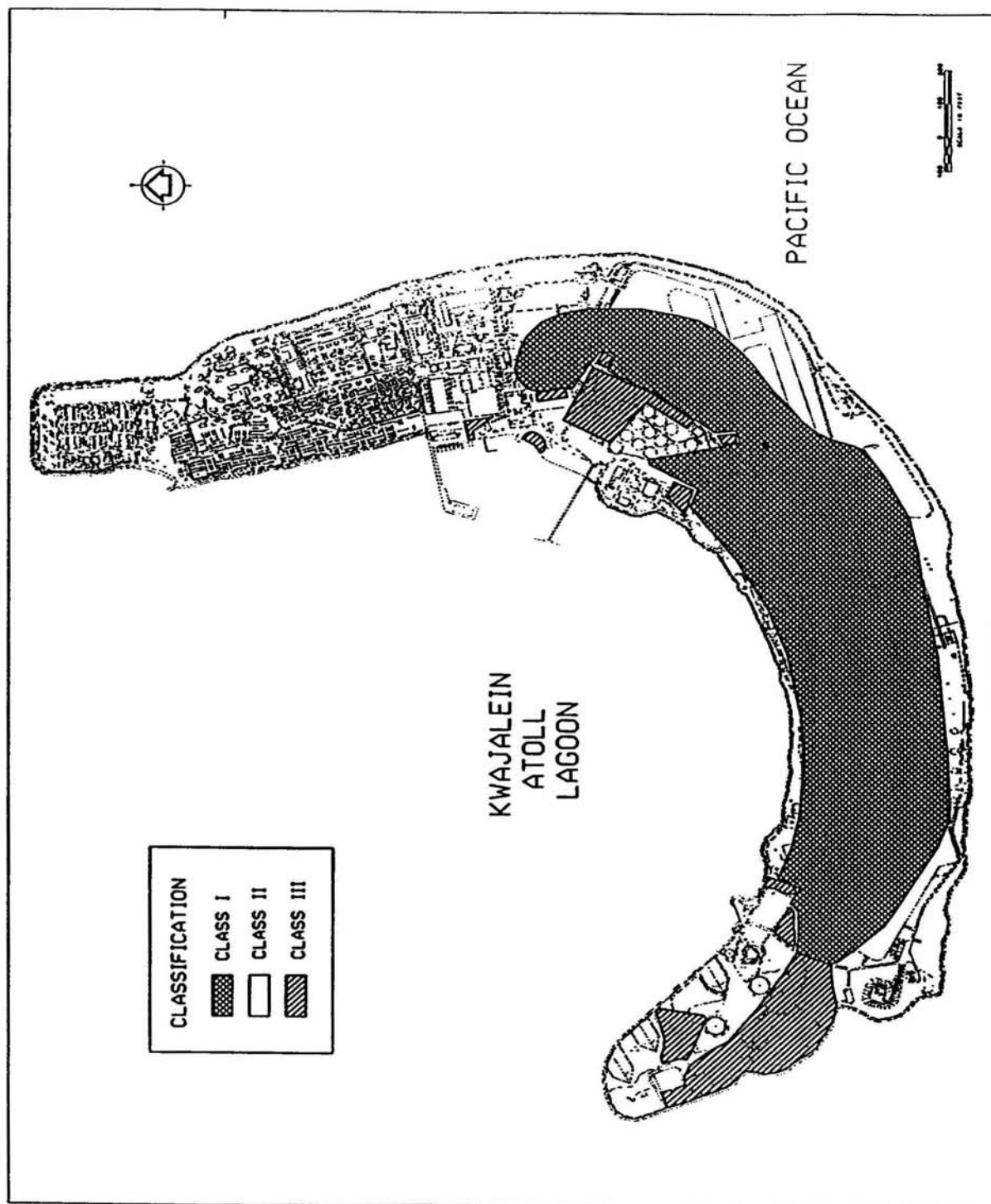


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**APPENDIX 3-2B**  
**CLASSIFICATIONS OF GROUNDWATER**

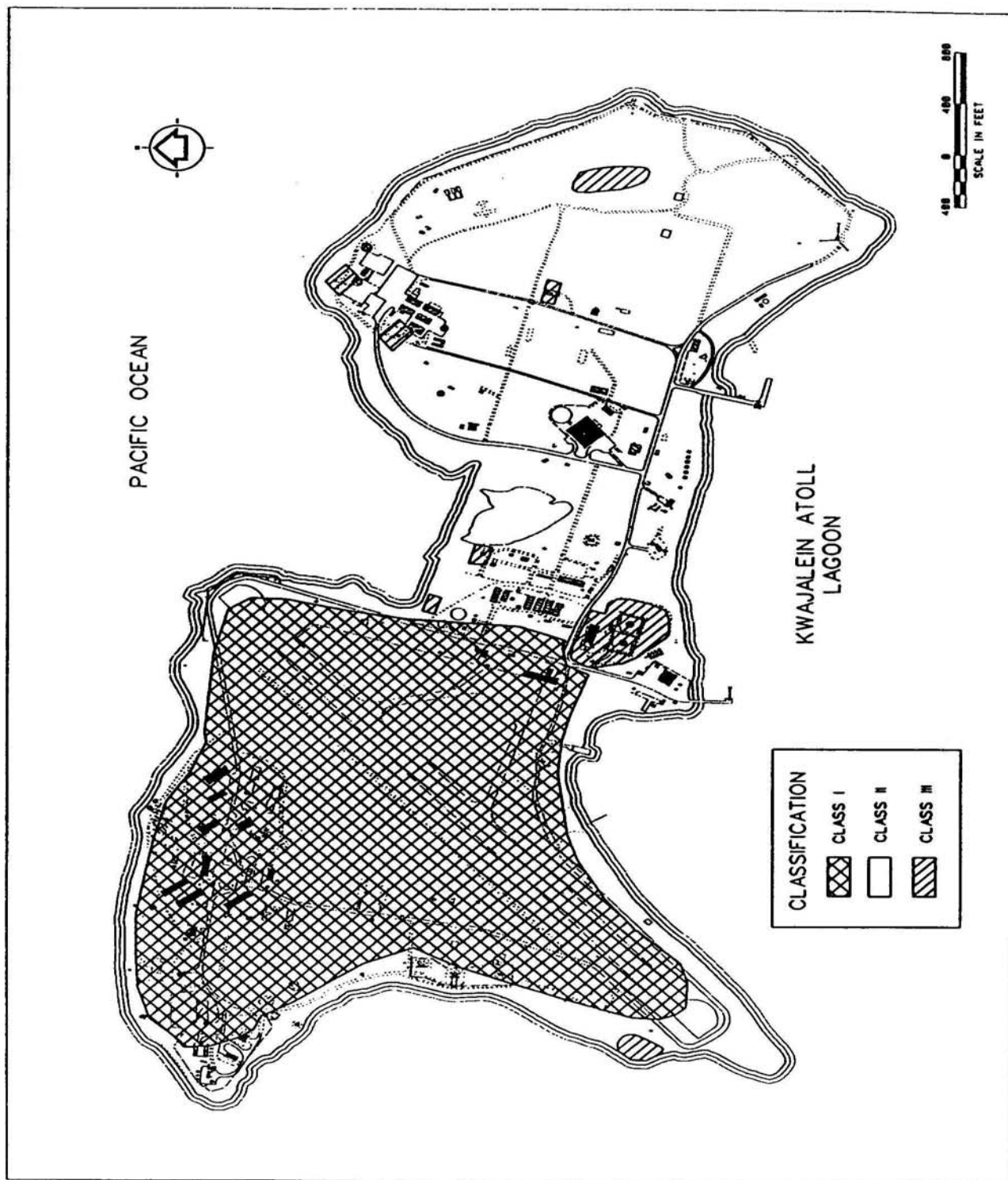
Appendix 3-2B  
CLASSIFICATIONS OF GROUNDWATER

FIGURE 3-2B.1 GROUNDWATER CLASSIFICATION FOR KWAJALEIN ISLAND



# Appendix 3-2B CLASSIFICATIONS OF GROUNDWATER

FIGURE 3-2B.2 GROUNDWATER CLASSIFICATION FOR ROI-NAMUR



**APPENDIX 3-2C**  
**SPECIFIC WATER QUALITY CRITERIA FOR SURFACE WATER**

**3-2C.1 SPECIFIC CRITERIA FOR WATER CLASSIFICATIONS**

The following criteria apply to discharges regulated under Section 3-2.

<b>TABLE 3-2C.1</b>			
<b>WATER QUALITY CRITERIA FOR WATER CLASSIFICATIONS</b>			
	<b>Water Classification</b>		
<b>Parameter</b>	<b>Class AA</b>	<b>Class A</b>	<b>Class B</b>
Microbiological Contaminants	Median total coliform $\leq 70$ per 100 milliliters (ml) for 10 consecutive samples, $\leq 230$ per 100 ml for any single sample	Standards for Class AA apply in areas where shellfish are harvested for human consumption; otherwise, fecal coliform $\leq 200$ per 100 ml (arithmetic mean) for any 10 consecutive samples, $\leq 400$ per 100 ml for any single sample.	
pH Units	7.7 - 8.5	7.7 - 8.5	6.5 - 8.5
Nutrient Material	For all water, total nitrogen and total phosphorus should not vary from natural conditions by more than 10 percent.		
Ratio of Total Nitrogen to Total Phosphorus	11 - 27 percent	11 - 27 percent	6 - 18 percent
Total Phosphorus P (Except for Natural Causes)	$\leq 0.025$ mg/l	$\leq 0.025$ mg/l	$\leq 0.050$ mg/l
Total Nitrogen as N (Except for Natural Causes)	$\leq 0.400$ mg/l	$\leq 0.400$ mg/l	$\leq 0.800$ mg/l
Dissolved Oxygen (Except for Natural Causes)	For all water, dissolved oxygen shall not vary from natural conditions by more than 25 percent.		
	6.0 mg/l or 75 percent of saturation, whichever is greater	5.0 mg/l	4.5 mg/l

<b>TABLE 3-2C.1</b> <b>WATER QUALITY CRITERIA FOR WATER CLASSIFICATIONS</b>			
	<b>Water Classification</b>		
<b>Parameter</b>	<b>Class AA</b>	<b>Class A</b>	<b>Class B</b>
Total Dissolved Solids, Salinity, Currents	No change in channels, basin geometry, or influx of fresh water shall be made that would cause permanent changes in isohaline patterns of more than 10 percent from the natural conditions or changes in salinity outside the range of 29 to 35 percent, or that would otherwise adversely affect indigenous biota and natural sedimentary patterns		
Temperature	Temperature shall not be allowed to vary from natural conditions by more than 0.9 C (1.5 F).		
Turbidity as Measured by Nephelometric Turbidity Units (NTU)	$\leq 1$ NTU	$\leq 1$ NTU	$\leq 2$ NTU
Radioactive Materials	<p>Shall not exceed 1/30th of the maximum permissible limits established for continuous occupational exposure given in National Bureau of Standards Handbook No. 69.</p> <p>No radionuclide or combination of radionuclides shall be present in amounts that would exceed the maximum permissible levels established under these regulations and listed in Appendix 3-2D.</p> <p>The concentration of radioactive materials in water shall not result in the accumulation of radioactivity in plants or animals that results in hazards to humans or aquatic life.</p>		
Oil and Petroleum Products	<p>The concentration of oil or petroleum products in all waters shall not:</p> <ul style="list-style-type: none"> <li>• Be detectable as a visible film, sheen, or discoloration of the surface or cause an objectionable odor</li> <li>• Cause tainting of fish or other aquatic life, be injurious to the indigenous biota, or cause objectionable taste in drinking water</li> <li>• Form an oil deposit on beaches or shorelines or on the bottom of a body of water.</li> </ul>		



### **3-2C.2 WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES**

(a) Numeric criteria for toxic substances are given in Table 3-2C.2. The chronic and acute criteria shall be achieved outside mixing zones specified in the DEP. The acute criteria may be exceeded within the mixing zone, only if there is no lethality to passing organisms. When criteria are not shown in Table 3-2C.2 or when criteria are believed to be inappropriate for USAKA, site-specific criteria will be developed using the procedures specified in the latest edition of the "Water Quality Standards Handbook" published by the United States Environmental Protection Agency. Site-specific criteria shall be determined by using the indigenous organism most sensitive to the substance in question.

(b) In the absence of a specific criterion, the general standards and requirements of Section 3-2.6.3(a) shall apply.

**TABLE 3-2C.2**  
**WATER QUALITY CRITERIA FOR PRIORITY TOXIC POLLUTANTS**

PRIORITY POLLUTANT	CAS NUMBER	SALTWATER		FR CITE/ SOURCE
		CMC (µG/L)	CCC (µG/L)	
Antimony	7440360			57FR60848
Arsenic	7440382	69 A,D,bb	36 A,D,bb	62FR42160 57FR60848
Beryllium	7440417			62FR42160
Cadmium	7440439	40 D,bb,gg	8.8 D,bb,gg	EPA-822-R-01-001 65FR31682
Chromium III	16065831			EPA820/B-96-001 62FR42160
Chromium VI	18540299	1,100 D,bb	50 D,bb	62FR42160
Copper	7440508	4.8 D,cc,ff	3.1 D,cc,ff	62FR42160
Lead	7439921	210 D,bb	8.1 D,bb	62FR42160
Mercury	7439976	1.8 D,ee,hh	0.94 D,ee,hh	62FR42160
Nickel	7440020	74 D,bb	8.2 D,bb	62FR42160
Selenium	7782492	290 D,bb,dd	71 D,bb,dd	62FR42160 IRIS 09/01/91
Silver	7440224	1.9 D,G		62FR42160
Thallium	7440280			57FR60848
Zinc	7440666	90 D,bb	81 D,bb	62FR42160 IRIS 10/01/92
Cyanide	57125	1 Q,bb	1 Q,bb	EPA820/B-96-001 57FR60848
Asbestos	1332214			57FR60848
2,3,7,8-TCDD Dioxin	1746016			62FR42160
Acrolein	107028			57FR60848
Acrylonitrile	107131			57FR60848
Benzene	71432			62FR42160
Bromoform	75252			62FR42160
Carbon Tetrachloride	56235			57FR60848
Chlorobenzene	108907			57FR60848
Chlorodibromomethane	124481			62FR42160
Chloroethane	75003			
2-Chloroethylvinyl Ether	110758			
Chloroform	67663			62FR42160
Dichlorobromomethane	75274			62FR42160
1,1-Dichloroethane	75343			
1,2-Dichloroethane	107062			57FR60848
1,1-Dichloroethylene	75354			57FR60848
1,2-Dichloropropane	78875			62FR42160
1,3- Dichloropropene	542756			57FR60848
Ethylbenzene	100414			62FR42160
Methyl Bromide	74839			62FR42160
Methyl Chloride	74873			62FR42160
Methylene Chloride	75092			62FR42160
1,1,2,2-Tetrachloroethane	79345			57FR60848
Tetrachloroethylene	127184			57FR60848

**TABLE 3-2C.2**  
**WATER QUALITY CRITERIA FOR PRIORITY TOXIC POLLUTANTS**

PRIORITY POLLUTANT	CAS NUMBER	SALTWATER		FR CITE/ SOURCE
		CMC (µG/L)	CCC (µG/L)	
Toluene	108883			62FR42160
1,2-Trans-Dichloroethylene	156605			62FR42160
1,1,1-Trichloroethane	71556			62FR42160
1,1,2-Trichloroethane	79005			57FR60848
Trichloroethylene	79016			57FR60848
Vinyl Chloride	75014			57FR60848
2-Chlorophenol	95578			62FR42160
2,4 Dichlorophenol	120832			57FR60848
2,4-Dimethylphenol	105679			62FR42160
2-Methyl-4,6- Dinitrophenol	534521			57FR60848
2,4-Dinitrophenol	51285			57FR60848
2-Nitrophenol	88755			
4-Nitrophenol	100027			
3-Methyl-4-Chlorophenol	59507			
Pentachlorophenol	87865	13 bb	7.9 bb	62FR42160
Phenol	108952			62FR42160 57FR60848
2,4,6-Trichlorophenol	88062			62FR42160
Acenaphthene	83329			62FR42160
Acenaphthylene	208968			
Anthracene	120127			62FR42160
Benzidine	92875			57FR60848
BenzoaAnthracene	56553			62FR42160
BenzoaPyrene	50328			62FR42160
BenzobFluoranthene	205992			62FR42160
BenzoghiPerylene	191242			
BenzokFluoranthene	207089			62FR42160
Bis2-ChloroethoxyMethane	111911			
Bis2-ChloroethylEther	111444			57FR60848
Bis2-ChloroisopropylEther	39638329			62FR42160 57FR60848
Bis2-EthylhexylPhthalate <sup>x</sup>	117817			57FR60848
4-Bromophenyl Phenyl Ether	101553			
Butylbenzyl Phthalate <sup>w</sup>	85687			62FR42160
2-Chloronaphthalene	91587			62FR42160
4-Chlorophenyl Phenyl Ether	7005723			
Chrysene	218019			62FR42160
Dibenzoa,hAnthracene	53703			62FR42160
1,2-Dichlorobenzene	95501			62FR42160
1,3-Dichlorobenzene	541731			62FR42160
1,4-Dichlorobenzene	106467			62FR42160
3,3'-Dichlorobenzidine	91941			57FR60848
Diethyl Phthalate <sup>w</sup>	84662			57FR60848
Dimethyl Phthalate <sup>w</sup>	131113			57FR60848
Di-n-Butyl Phthalate <sup>w</sup>	84742			57FR60848
2,4-Dinitrotoluene	121142			57FR60848

**TABLE 3-2C.2**  
**WATER QUALITY CRITERIA FOR PRIORITY TOXIC POLLUTANTS**

PRIORITY POLLUTANT	CAS NUMBER	SALTWATER		FR CITE/ SOURCE
		CMC (µG/L)	CCC (µG/L)	
2,6-Dinitrotoluene	606202			
Di-n-Octyl Phthalate	117840			
1,2-Diphenylhydrazine	122667			57FR60848
Fluoranthene	206440			62FR42160
Fluorene	86737			62FR42160
Hexachlorobenzene	118741			62FR42160
Hexachlorobutadiene	87683			57FR60848
Hexachlorocyclopentadiene	77474			57FR60848
Hexachloroethane	67721			57FR60848
Idenol,2,3-cdPyrene	193395			62FR42160
Isophorone	78591			IRIS 11/01/97
Naphthalene	91203			
Nitrobenzene	98953			57FR60848
N-Nitrosodimethylamine	62759			57FR60848
N-Nitrosodi-n-Propylamine	621647			62FR42160
N-Nitrosodiphenylamine	86306			57FR60848
Phenanthrene	85018			
Pyrene	129000			62FR42160
1,2,4-Trichlorobenzene	120821			IRIS 11/01/96
Aldrin	309002	1.3 G		62FR42160
alpha-BHC	319846			62FR42160
beta-BHC	319857			62FR42160
gamma-BHC (Lindane)	58899	0.16 G		62FR42160
delta-BHC	319868			
Chlordane	57749	0.09 G	0.004 G,aa	62FR42160 IRIS 02/07/98
4,4'-DDT	50293	0.13G	0.001 G,aa	62FR42160
4,4'-DDE	72559			62FR42160
4,4'-DDD	72548			62FR42160
Dieldrin	60571	0.71G	0.0019 G,aa	62FR42160
alpha-Endosulfan	959988	0.034 G,Y	0.0087 G,Y	62FR42160
beta-Endosulfan	33213659	0.034 G,Y	0.0087 G,Y	62FR42160
Endosulfan Sulfate	1031078			62FR42160
Endrin	72208	0.037 G	0.0023 G,aa	62FR42160
Endrin Aldehyde	7421934			62FR42160
Heptachlor	76448	0.053 G	0.0036 G,aa	62FR42160
Heptachlor Epoxide	1024573	0.053 G,V	0.0036 G,V,aa	62FR42160
Polychlorinated Biphenyls PCBs:			0.03 N,aa	62FR42160 63FR16182
Toxaphene	8001352	0.21	0.0002 aa	62FR42160

## [App 3-2C]

CMC = Criterion maximum concentration, the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (1-hour average) without deleterious effects (also referred to as the acute criteria).

CCC = Criterion continuous concentration, the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (4 days) without deleterious effects (also referred to as the chronic criteria).

CAS = Chemical Abstracts Service (CAS) registry number.

### Footnotes:

- A This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.
- B This criterion has been revised to reflect The Environmental Protection Agency's q1\* or RfD, as contained in the Integrated Risk Information System (IRIS) as of April 8, 1998. The fish tissue bioconcentration factor (BDF) from the 1980 Ambient Water quality Criteria document was retained in each case.
- C This criterion is based on carcinogenicity of  $10^{-6}$  risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of  $10^{-5}$ , move the decimal point in the recommended criterion one place to the right).
- D Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. The recommended water quality criteria value was calculated by using the previous 304(a) aquatic life criteria expressed in terms of total recoverable metal, and multiplying it by a conversion factor (CF). The term "Conversion Factor" (CF) represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. (Conversion Factors for saltwater CCCs are not currently available. Conversion factors derived for saltwater CMCs have been used for both saltwater CMCs and CCCs). See "Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria," October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource Center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40 CFR§131.36(b)(1). Conversion Factors applied in the table can be found in Appendix A to the Preamble-Conversion Factors for Dissolved Metals.
- E The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 100 mg/L. Criteria values for other hardness may be calculated from the following: CMC (dissolved) =  $\exp\{m_A[\ln(\text{hardness})]+b_A\}$  (CF), or CCC (dissolved) =  $\exp\{m_C[\ln(\text{Hardness})]+b_C\}$  (CF) and the parameters specified in Appendix B to the Preamble-Parameters for Calculating Freshwater Dissolved Metals Criteria That are Hardness-Dependent.
- F Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC =  $\exp(1.005(\text{pH})-4.869)$ ; CCC =  $\exp(1.005(\text{pH})-5.134)$ . Values displayed in table correspond to a pH of 7.8.
- G This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA 440/580-046), Endrin (EPA 440/580-047), Heptachlor (440/5-80-052), Hexachlorocyclohexane (EPA 440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given

- should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.
- H No criterion for protection of human health from consumption of aquatic organisms excluding water was presented in the 1980 criteria document or in the 1986 *Quality Criteria for Water*. Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.
  - I This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA).
  - J EPA has not calculated human health criterion for this contaminant. However, permit authorities should address this contaminant in NPDES permit actions using the State's existing narrative criteria for toxics.
  - K This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the 1995 *Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*, (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.
  - L The  $CMC = 1/[(f1/CMC1) + (f2/CMC2)]$  where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.83 µg/l, respectively.
  - M EPA is currently reassessing the criteria for arsenic. Upon completion of the reassessment the Agency will publish revised criteria as appropriate.
  - N PCBs are a class of chemicals which include aroclors, 1242, 1254, 1221, 1232, 1248, 1260, and 1016, CAS numbers 53469219, 11097691, 11104282, 11141165, 12672296, 11096825 and 12674112 respectively. The aquatic life criteria apply to this set of PCBs.
  - O The derivation of the CCC for this pollutant did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.
  - P This criterion applies to total PCBs, i.e., the sum of all congener or all isomer analyses.
  - Q This recommended water quality criterion is expressed as µg free cyanide (as CN)/L.
  - R This value was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303(c) aquatic life criterion. EPA is currently working on this criterion and so this value might change substantially in the near future.
  - S This recommended water quality criterion refers to the inorganic form only.
  - T This recommended water quality criterion is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor of 0.922 that was used in the GLI to convert this to a value that is expressed in terms of dissolved metal.
  - U The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.
  - V This value was derived from data for heptachlor and the criteria document provides sufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.
  - W Although EPA has not published a final criteria document for this compound it is EPA's understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that industry intends to publish in the peer reviewed literature draft aquatic life criteria generated in accordance with EPA Guidelines. EPA will review such criteria for possible issuance as national WQC.
  - X There is a full set of aquatic life toxicity data that show that DEHP is not toxic to aquatic organisms at or below its solubility limit.
  - Y This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
  - Z A more stringent MCL has been issued by EPA. Refer to drinking water regulations (40 CFR 141) or Safe Drinking Water Hotline (1-800-426-4791) for values.
  - aa This CCC is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
  - bb This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of*

*Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA 440/5-84-032), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5-84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87-003).

- cc When the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
- dd The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 µg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.
- ee This recommended water quality criterion was derived on page 43 of the mercury criteria document (EPA 440/5-84-026, January 1985). The saltwater CCC of 0.025 µg/L given on page 23 of the criteria document is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
- ff This recommended water quality criterion was derived in *Ambient Water Quality Criteria Saltwater Copper Addendum* (Draft, April 14, 1995) and was promulgated in the Interim final National Toxics Rule (60FR22228-222237, May 4, 1995).
- gg EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.
- hh This recommended water quality criterion was derived from data for inorganic mercury (II), but is applied here to total mercury. If a substantial portion of the mercury in the water column is methylmercury, this criterion will probably be under protective. In addition, even though inorganic mercury is converted to methylmercury and methylmercury bioaccumulates to a great extent, this criterion does not account for uptake via the food chain because sufficient data were not available when the criterion was derived.

TABLE 3-2C.3 WATER QUALITY CRITERIA FOR NON PRIORITY POLLUTANTS				
NON PRIORITY POLLUTANT	CAS NUMBER	SALTWATER		FR CITE/SOURCE
		CMC (µG/L)	CCC (µG/L)	
Alkalinity	--			Gold Book
Aluminum pH 6.5-9.0	7429905			53FR33178
Ammonia	7664417	SALTWATER CRITERIA ARE pH AND TEMPERATURE DEPENDENT <sup>b</sup>		EPA822-R-98-008 EPA440/5-88-004
Aesthetic Qualities	--	NARRATIVE STATEMENT—SEE DOCUMENT		Gold Book
Bacteria	--	FOR PRIMARY RECREATION AND SHELLFISH USES – SEE DOCUMENT		Gold Book
Barium	7440393			Gold Book
Boron	--	NARRATIVE STATEMENT—SEE DOCUMENT		Gold Book
Chloride	16887006			53FR19028
Chlorine	7782505	13	7.5	Gold Book
Chlorophenoxy Herbicide 2,4,5,-TP	93721			Gold Book
Chlorophenoxy Herbicide 2,4,-D	94757			Gold Book
Chlorpyrifos	2921882	0.011 G	0.0056 G	Gold Book
Color	--	NARRATIVE STATEMENT—SEE DOCUMENT <sup>F</sup>		Gold Book
Demeton	8065483			Gold Book
Ether, Bis Chloromethyl	542881			IRIS 01/01/91
Gases, Total Dissolved		NARRATIVE STATEMENT—SEE DOCUMENT <sup>F</sup>		Gold Book
Guthion	86500		0.01 F	Gold Book
Hardness	--	NARRATIVE STATEMENT—SEE DOCUMENT		Gold Book
Hexachlorocyclo-hexane- Technical	319868			Gold Book
Iron	7439896			Gold Book
Malathion	121755		0.1 F	Gold Book
Manganese	7439965			Gold Book
Methoxychlor	72435		0.03 F	Gold Book
Mirex	2385855		0.001 F	Gold Book
Nitrates	14797558			Gold Book
Nitrosamines	--			
Dinitrophenols	25550587			Gold Book
Nitrosodibutylamine,N	924163			Gold Book
Nitrosodiethylamine,N	55185			Gold Book
Nitrosopyrrolidine,N	930552			Gold Book
Oil and Grease	--	NARRATIVE STATEMENT—SEE DOCUMENT <sup>F</sup>		Gold Book
Oxygen, Dissolved		<u>SALTWATER</u> – SEE DOCUMENT		<u>EPA-822R-00-012</u> <u>Saltwater</u>
Parathion	56382			Gold Book
Pentachlorobenzene	608935			IRIS 03/01/88



TABLE 3-2C.3 WATER QUALITY CRITERIA FOR NON PRIORITY POLLUTANTS				
		SALTWATER		
NON PRIORITY POLLUTANT	CAS NUMBER	CMC (µG/L)	CCC (µG/L)	FR CITE/SOURCE
pH	--		6.5-8.5 F,K	Gold Book
Phosphorus Elemental	7723140		0.1 F,K	Gold Book
Phosphate Phosphorus	--	NARRATIVE STATEMENT – SEE DOCUMENT		Gold Book
Solids Dissolved and Salinity	--			Gold Book
Solids Suspended and Turbidity	--	NARRATIVE STATEMENT – SEE DOCUMENT <sup>F</sup>		Gold Book
Sulfide-Hydrogen Sulfide	7783064		2.0 F	Gold Book
Tainting Substances	--	NARRATIVE STATEMENT – SEE DOCUMENT		Gold Book
Temperature	--	SPECIES DEPENDENT CRITERIA – SEE DOCUMENT <sup>M</sup>		Gold Book
Tetrachlorobenzene,1,2,4,5-	95943			IRIS 03/01/91
Tributyltin TBT	--	0.37 N	0.010 N	62FR42554
Trichlorophenol,2,4,5-	95954			IRIS 03/01/88

CMC = Criterion maximum concentration, the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (1-hour average) without deleterious effects (also referred to as the acute criteria).

CCC = Criterion continuous concentration, the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (4 days) without deleterious effects (also referred to as the chronic criteria).

CAS = Chemical Abstracts Service (CAS) registry number.

Footnotes:

- A This human health criterion is the same as originally published in the Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is now published in the Gold Book.
- B The organoleptic effect criterion is more stringent than the value presented in the non priority pollutants table.
- C A more stringent Maximum Contaminant Level (MCL) has been issued by EPA under the Safe Drinking Water Act. Refer to drinking water regulations 40CFR141 or Safe Drinking Water Hotline (1-800-426-4791) for values.
- D According to the procedures described in the *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, except possibly where a very sensitive species is important at a site, freshwater aquatic life should be protected if both conditions specified in Appendix C to the Preamble-Calculation of Freshwater Ammonia Criterion are satisfied.
- E This criterion has been revised to reflect The Environmental Protection Agency's q1\* or RFD, as contained in the Integrated Risk Information System (IRIS) as of April 8, 1998. The fish tissue bioconcentration factor (BDF) used to derive the original criterion was retained in each case.
- F The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).
- G This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic*

*Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Aluminum (EPA 440/5-86-008); Chloride (EPA 440/5-88-001); Chlorpyrifos (EPA 440/5-86-005).

- I This value is expressed in terms of total recoverable metal in the water column.
- J This value is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water* (EPA-820-B-96-001). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40 CFR132 Appendix A); the differences between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. No decision concerning this criterion was affected by any considerations that are specific to the Great Lakes.
- K According to page 181 of the Red Book:  
For open ocean waters where the depth is substantially greater than the euphotic zone, the pH should not be changed more than 0.2 units from the naturally occurring variation or any case outside the range of 6.5 to 8.5 For shallow, highly productive coastal and estuarine areas where naturally occurring pH variations approach the lethal limits of some species, changes in pH should be avoided but in any case should not exceed the limits established for fresh water, i.e., 6.5-9.0.
- L There are three major reasons why the use of Water-Effect Ratios might be appropriate. (1) The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH=6.5-6.6 and hardness<10 mg/L. data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time. (2) In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide. (3) EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg aluminum/L, when either total recoverable or dissolved is measured.
- M U.S. EPA, 1973. *Water Quality Criteria* 1972. EPA-R3-73-033. National Technical Information Service, Springfield, VA.; U.S. EPA. 1977. *Temperature Criteria for Freshwater Fish; Protocol and Procedures*. EPA-600/3-77-061. National Technical Information Service, Springfield, VA.
- N This value was announced (62FR42554, August 7, 1997) as a proposed 304(a) aquatic life criterion. Although EPA has not responded to public comment, EPA is publishing this as a 304(a) criterion in today's notice as guidance for States and Tribes to consider when adopting water quality criteria.
- O U.S. EPA. 1986. *Ambient Water Quality Criteria for Dissolved Oxygen*. EPA 440/5-86-003. National Technical Information Service, Springfield, VA

**APPENDIX 3-2D**  
**GROUNDWATER QUALITY**

<b>TABLE 3-2D.1</b> <b>PRIMARY STANDARDS FOR GROUNDWATER QUALITY</b>	
<b>Parameter</b>	<b>Primary Standard (milligrams per liter, except as noted)</b>
<b>INORGANIC</b>	
Antimony	0.006
Arsenic	0.05
Asbestos	7 million fibers per liter(longer than 10µm)
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Copper	1.3 (action level)
Cyanide (free)	0.2
Fluoride	4.0
Lead	0.015 (action level)
Mercury	0.002
Nitrate (as N)	10
Nitrite (as N)	1
Nitrite + Nitrate (Total) (as N)	10
Selenium	0.05
Thallium	0.002
<b>ORGANIC</b>	
Acrylamide	Treatment Technique
Alachlor	0.002
Aldicarb	0.003
Aldicarb sulfone	0.002
Aldicarb sulfoxide	0.004
Atrazine	0.003
Benzene	0.005
Benzo[a]pyrene	0.0002
Carbofuran	0.04
Carbon Tetrachloride	0.005
Chlordane	0.002
Dalapon	0.2
Di-(2-ethylhexyl)-adipate	0.4
Di-(2-ethylhexyl)-phthalate	0.006
Dibromochloropropane	0.0002
Dichloroethane -1,2	0.005

**TABLE 3-2D.1**  
**PRIMARY STANDARDS FOR GROUNDWATER QUALITY**

Dichlorobenzene-ortho	0.6
Dichlorobenzene-para	0.075
Dichloroethylene-1,1	0.007
Dichloroethylene-cis-1,2	0.07
Dichloroethylene-trans-1,2	0.1
Dichloromethane	0.005
Dichlorophenoxyacetic acid-2,4(2,4-D)	0.07
Dichloropropane-1,2	0.005
Dinoseb	0.007
Dioxin (2,3,7,8-TCDD)	$3.0 \times 10^{-8}$
Diquat	0.02
Endothall	0.1
Endrin	0.002
Epichlorohydrin	Treatment Technique
Ethylbenzene	0.7
Ethylene dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachloro epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Monochlorobenzene	0.1
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs)	0.0005
Simazine	0.004
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
Toxaphene	0.003
Trichlorobenzene- 1,2,4	0.07
Trichloroethane - 1,1,1	0.2
Trichloroethane - 1,1,2	0.005
Trichloroethylene	0.005
Trichlorophenoxy propionic acid-2,4,5 (silvex)(2,4,5-TP)	0.05
Vinyl Chloride	0.002
Xylenes (total)	10

TABLE 3-2D.1 PRIMARY STANDARDS FOR GROUNDWATER QUALITY	
RADIONUCLIDE	
Gross Alpha Particles	15 pCi/L
Beta Particle & Photon radioactivity	4 millirem/year
Radium-226 & -228	5.0 pCi/L
Strontium-90	8.0 pCi/L
Tritium	20,000 pCi/L
Reference: 40 CFR 141	

TABLE 3-2D.2 SECONDARY STANDARDS FOR GROUNDWATER QUALITY	
Parameter	Secondary Standard (milligrams per liter, except as noted)
Aluminum	0.05-0.2
Color	15 color units
Copper	1.0
Corrosivity	Non-corrosive
Fluoride	2.0
Foaming Agents	0.5
Iron	0.3
Manganese	0.05
Odor	3 threshold odor number
pH	6.5 - 8.5
Silver	0.1
Sulfate	250
Zinc	5
Reference: 40 CFR 143.3	

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270	200 10
Acetone	67-64-1	2-Propanone	8240	100
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
2-Acetylamino-fluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	10
Acrolein	107-02-8	2-Propenal	8030 8240	5 5
Acrylonitrile	107-13-1	2-Propenenitrile	8240 8030	5 5
Aldrin	309-00-2	1,4:5,8-Dimethano-naphthalene, 1,2,3,4, 10,10-hexachloro-1, 4,4a,5,8,8a-hexa-hydro-(1 $\alpha$ ,4 $\alpha$ ,4a $\beta$ ,5 $\alpha$ ,8 $\alpha$ ,8a $\beta$ )-	8080 8270	0.05 10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010 8240	5 100
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	10
Aniline	62-53-3	Benzenamine	8270	10
Anthracene	120-12-7	Anthracene	8100 8270	200 10
Antimony	(Total)	Antimony	6010 7040 7041	300 2,000 30
Aramite	140-57-8	Sulfurous acid, 2-chloroethyl 2-[4-(1,1- dimethylethyl)-phenoxy]-1-methylethyl ester	8270	10
Arsenic	(Total)	Arsenic	6010 7060 7061	500 10 20
Barium	(Total)	Barium	6010 7080	20 1,000
Benzene	71-43-2	Benzene	8020 8240	2 5
Benzo[a]anthracene; Benzanthracene.	56-55-3	Benz[a]anthracene	8100 8270	200 10
Benzo[b]fluoranthene	205-99-2	Benz[e]- acephenanthrylene	8100 8270	200 10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100 8270	200 10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100 8270	200 10

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100 8270	200 10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010 7090 7091	3 50 2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 $\alpha$ ,2 $\alpha$ ,3 $\beta$ ,4 $\alpha$ ,5 $\beta$ ,6 $\beta$ )-	8080 8250	0.05 10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 $\alpha$ ,2 $\beta$ ,3 $\alpha$ ,4 $\beta$ ,5 $\alpha$ ,6 $\beta$ )-	8080 8250	0.05 40
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 $\alpha$ ,2 $\alpha$ ,3 $\alpha$ ,4 $\beta$ ,5 $\alpha$ ,6 $\beta$ )-	8080 8250	0.1 30
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 $\alpha$ ,2 $\alpha$ ,3 $\beta$ ,4 $\alpha$ ,5 $\alpha$ ,6 $\beta$ )-	8080 8250	0.05 10
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1'-[methylenebis-(oxy)]bis[2-chloro-	8270	10
Bis(2-chloroethyl) ether	111-44-4	Ethane, 1,1'-oxybis [2-chloro-	8270	10
Bis(2-chloro-1-methylethyl) ether; 2,2'-Dichlorodiisopropyl ether.	108-60-1	Propane, 2,2'-oxybis [1-chloro-	8010 8270	100 10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis- (2-ethylhexyl) ester.	8060 8270	20 10
Bromodichloromethane	75-27-4	Methane, bromodichloro-	8010 8240	1 5
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010 8240	2 5
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester.	8060 8270	5 10
Cadmium	(Total)	Cadmium	6010 7130 7131	40 50 1
Carbon disulfide	75-15-0	Carbon disulfide	8240	5
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010 8240	1 5
Chlordane	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2, 3,3a, 4,7,7a-hexahydro-	8080 8250	0.1 10
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Chlorobenzene	108-90-7	Benzene, chloro-	8010 8020 8240	2 2 5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro- $\alpha$ -(4-chlorophenyl)- $\alpha$ -hydroxy-, ethyl ester.	8270	10
p-Chloro-m-cresol	59-50-7	Phenol, 4-chloro- 3-methyl-	8040 8270	5 20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010 8240	5 10
Chloroform	67-66-3	Methane, trichloro-	8010 8240	0.5 5
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	8120 8270	10 10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040 8270	5 10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8270	10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010 8240	50 5
Chromium	(Total)	Chromium	6010 7190 7191	70 500 10
Chrysene	218-01-9	Chrysene	8100 8270	200 10
Cobalt	(Total)	Cobalt	6010 7200 7201	70 500 10
Copper	(Total)	Copper	6010 7210	60 200
m-Cresol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	9010	40
2,4-D; 2,4-Dichloro-phenoxyacetic acid.	94-75-7	Acetic acid, (2,4-dichloro-phenoxy)-	8150	10
4,4'-DDD	72-54-8	Benzene 1,1'-(2,2-dichloro-ethylidene) bis[4-chloro-	8080 8270	0.1 10
4,4'-DDE	72-55-9	Benzene, 1,1'-(dichloro-ethenylidene) bis[4-chloro-	8080 8270	0.05 10
4,4'-DDT	50-29-3	Benzene, 1,1'-(2,2,2-trichloro-ethylidene) bis[4-chloro-	8080 8270	0.1 10
Diallate	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester.	8270	10
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100 8270	200 10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10



TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Dibromochloro- methane; Chlorodi- bromomethane	124-48-1	Methane, dibromochloro-	8010 8240	1 5
1,2-Dibromo-3- chloropropane; DBCP.	96-12-8	Propane, 1,2-dibromo-3- chloro-	8010 8240 8270	100 5 10
1,2-Dibromoethane; Ethylene dibromide.	106-93-4	Ethane, 1,2-dibromo-	8010 8240	10 5
Di-n-butyl phthalate	84-74-2	1,2-Benzene dicarboxylic acid, dibutyl ester	8060 8270	5 10
o-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010 8020 8120 8270	2 5 10 10
m-Dichlorobenzene	541-73-1	Benzene, 1,3-dichloro-	8010 8020 8120 8270	5 5 10 10
p-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010 8020 8120 8270	2 5 15 10
3,3'-Dichloro- benzidine	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'- dichloro-	8270	20
trans-1,4-Dichloro-2- butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8240	5
Dichlorodifluoro- methane	75-71-8	Methane, dichlorodifluoro-	8010 8240	10 5
1,1-Dichloroethane	75-34-3	Ethane, 1,1-dichloro-	8010 8240	1 5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,2-dichloro-	8010 8240	0.5 5
1,1-Dichloroethylene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010 8240	1 5
trans-1,2-Dichloro- ethylene	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010 8240	1 5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040 8270	5 10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane	78-87-5	Propane, 1,2-dichloro-	8010 8240	0.5 5
cis-1,3-Dichloro- propene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010 8240	20 5
trans-1,3- Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010 8240	5 5

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/L) <sup>6</sup>
Dieldrin	60-57-1	2,7:3,6-Dimethano naphth [2,3-b]oxirene, 3,4,5,6,9,9-hexa-chloro-1a,2,2a,3,6,6a,7,7a-octahydro-(1 $\alpha$ ,2 $\beta$ ,2 $\alpha$ , 3 $\beta$ ,6 $\beta$ , 6 $\alpha$ ,7 $\beta$ ,7 $\alpha$ )-	8080 8270	0.05 10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester.	8060 8270	5 10
O,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	8270	10
Dimethoate	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester.	8270	10
p-(Dimethylamino)-azobenzene	60-11-7	Benzenamine,N,N-dimethyl-4-(phenylazo)-	8270	10
7,12- Dimethyl-benz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3'-Dimethylbenzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine,3,3'-dimethyl-	8270	10
alpha, alpha-Dimethylphenethylamine.	122-09-8	Benzeneethanamine, $\alpha$ , $\alpha$ dimethyl-	8270	10
2,4-Dimethylphenol	105-67-9	Phenol, 2,4-dimethyl-	8040 8270	5 10
Dimethyl phthalate	131-11-3	1,2-Benzene dicarboxylic acid, dimethyl ester	8060 8270	5 10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	10
4,6-Dinitro-o-cresol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040 8270	150 50
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	8040 8270	150 50
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090 8270	0.2 10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090 8270	0.1 10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8150 8270	1 10
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060 8270	30 10
1,4-Dioxane	123-91-1	1,4-Dioxane.	8015	150
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester	8140 8270	2 10

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide,(3 $\alpha$ ,5 $\alpha\beta$ ,6 $\alpha$ , 9 $\alpha$ ,9 $\alpha\beta$ )-.	8080 8250	0.1 10
Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3 $\alpha$ ,5 $\alpha\alpha$ ,6 $\beta$ ,9 $\beta$ ,9 $\alpha\alpha$ )-	8080	0.05
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide.	8080 8270	0.5 10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-,(1 $\alpha\alpha$ ,2 $\beta$ ,2 $\alpha\beta$ , 3 $\alpha$ ,6 $\alpha$ , 6 $\alpha\beta$ , 7 $\beta$ ,7 $\alpha\alpha$ )-	8080 8250	0.1 10
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta [cd]-pentalene-5-carbox-aldehyde, 2,2a,3,3,4,7- hexachloro-decahydro-,(1 $\alpha$ , 2 $\beta$ , 2 $\alpha\beta$ ,4 $\beta$ ,4 $\alpha\beta$ , 5 $\beta$ ,6 $\alpha\beta$ ,6 $\beta\beta$ ,7R*)-	8080 8270	0.2 10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020 8240	2 5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8240 8270	10 5 10
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester.	8270	10
Famphur	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]-O,O-dimethyl ester	8270	10
Fluoranthene	206-44-0	Fluoranthene	8100 8270	200 10
Fluorene	86-73-7	9H-Fluorene	8100 8270	200 10
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6, 6a,-hexahydro-,(1 $\alpha\alpha$ ,1 $\beta\beta$ ,2 $\alpha$ ,5 $\alpha$ ,5 $\alpha\beta$ , 6 $\beta$ ,6 $\alpha\alpha$ )	8080 8270	1 10
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8120 8270	0.5 10

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8120 8270	5 10
Hexachloro-cyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120 8270	5 10
Hexachloroethane	67-72-1	Ethane, hexachloro-	8120 8270	0.5 10
Hexachlorophene	70-30-4	Phenol, 2,2'-methylenebis-[3,4,6-trichloro-	8270	10
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone	591-78-6	2-Hexanone	8240	50
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno [1,2,3-cd]pyrene	8100 8270	200 10
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8015	50
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a hexahydro-(1 $\alpha$ ,4 $\alpha$ ,4a $\beta$ ,5 $\beta$ ,8 $\beta$ ,8a $\beta$ )-	8270	10
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta-[cd]-pentalen-2-one, 1,1a,3,3a,4,5,5, 5a,5b,6-decachlorooctahydro-	8270	10
Lead	(Total)	Lead	6010 7420 7421	40 1,000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015 8240	5 5
Methapyrilene	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	8270	10
Methoxychlor	72-43-5	Benzene, 1,1'-(2,2,2, trichloroethylidene)-bis [4-methoxy-	8080 8270	2 10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010 8240	20 10
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	8010 8240	1 10
3-Methyl-cholanthrene	56-49-5	Benz[j]-aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	8010 8240	15 5
Methylene chloride; Dichloromethane	75-09-2	Methane, dichloro-	8010 8240	5 5

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Methyl ethyl ketone; MEK	78-93-3	2-Butanone	8015 8240	10 100
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	8010 8240	40 5
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015 8240	2 5
Methyl methane- sulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methyl-naphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, O,O- dimethyl O-(4-nitrophenyl) ester.	8140 8270	0.5 10
4-Methyl-2-penta- none; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015 8240	5 50
Naphthalene	91-20-3	Naphthalene	8100 8270	200 10
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	50 400
o-Nitroaniline	88-74-4	Benzenamine,2-nitro-	8270	50
m-Nitroaniline	99-09-2	Benzenamine,3-nitro-	8270	50
p-Nitroaniline	100-01-6	Benzenamine,4-nitro-	8270	50
Nitrobenzene	98-95-3	Benzene, nitro-	8090 8270	40 10
o-Nitrophenol	88-75-5	Phenol, 2-nitro-	8040 8270	5 10
p-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040 8270	10 50
4-Nitroquinoline 1- oxide	56-57-5	Quinoline, 4-nitro-, 1-oxide	8270	10
N-Nitrosodi-n- butylamine	924-16-3	1-Butanamine, N-butyl-N- nitroso-	8270	10
N-Nitroso- diethylamine	55-18-5	Ethanamine, N-ethyl-N- nitroso-	8270	10
N-Nitroso- dimethylamine	62-75-9	Methanamine, N-methyl-N- nitroso-	8270	10
N-Nitroso- diphenylamine	86-30-6	Benzenamine, N-nitroso-N- phenyl-	8270	10
N-Nitrosodipropyl- amine; Di-n- propylnitrosamine	621-64-7	1-Propanamine,N- nitroso-N-propyl-	8270	10
N-Nitrosomethyl ethylamine	10595-95-6	Ethanamine, N-methyl-N- nitroso-	8270	10
N-Nitroso- morpholine	59-89-2	Morpholine, 4-nitroso-	8270	10

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-	8270	10
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	10
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester	8270	10
Polychlorinated biphenyls; PCBs	See Note 7	1,1'-Biphenyl, chloro derivatives	8080 8250	50 100
Polychlorinated dibenzo-p-dioxins; PCDDs	See Note 8	Dibenzo[b,e] [1,4]dioxin, chloro derivatives	8280	0.01
Polychlorinated dibenzofurans; PCDFs	See Note 9	Dibenzofuran, chloro derivatives	8280	0.01
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloroethane	76-01-7	Ethane, pentachloro-	8240 8270	5 10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	10
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040 8270	5 50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)	8270	10
Phenanthrene	85-01-8	Phenanthrene	8100 8270	200 10
Phenol	108-95-2	Phenol	8040 8270	1 10
p-Phenylenediamine	106-50-3	1,4-Benzenediamine	8270	10
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	8140 8270	2 10
2-Picoline	109-06-8	Pyridine, 2-methyl-	8240 8270	5 10
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015 8240	60 5
Pyrene	129-00-0	Pyrene	8100 8270	200 10
Pyridine	110-86-1	Pyridine	8240 8270	5 10
Safrole	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Total)	Selenium	6010 7740 7741	750 20 20
Silver	(Total)	Silver	6010 7760	70 100

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
Silvex; 2,4,5-TP.	93-72-1	Propanoic acid,2-(2,4,5-trichloro-phenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020 8240	1 5
Sulfide	18496-25-8	Sulfide	9030	10,000
2,4,5-T;2,4,5-Trichlorophenoxy-acetic acid.	93-76-5	Acetic acid,(2,4,5- trichloro-phenoxy)-	8150	2
2,3,7,8-TCDD; 2,3,7,8-Tetrachlorodibenzo-p- dioxin	1746-01-6	Dibenzo [b,e][1,4]dioxin,2,3,7,8-tetrachloro-	8280	0.005
1,2,4,5-Tetrachloro-benzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloro-ethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010 8240	5 5
1,1,2,2-Tetrachloro-ethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010 8240	0.5 5
Tetrachloroethylene; Perchloroethylene; Tetrachloroethene	127-18-4	Ethene, tetrachloro-	8010 8240	0.5 5
2,3,4,6-Tetrachloro-phenol.	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Tetraethyl dithio-pyrophosphate; Sulfotepp.	3689-24-5	Thiodiphosphoric acid ([ (HO) <sub>2</sub> P(S)] <sub>2</sub> O), tetraethyl ester	8270	10
Thallium	(Total)	Thallium	6010 7840 7841	400 1,000 10
Tin	(Total)	Tin	7870	8,000
Toluene	108-88-3	Benzene, methyl-	8020 8240	2 5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	8001-35-2	Toxaphene	8080 8250	2 10
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8270	10
1,1,1-Trichloro-ethane; Methyl-chloroform.	71-55-6	Ethane, 1,1,1-trichloro-	8240	5
1,1,2- Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010 8240	0.2 5
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-	8010 8240	1 5
Trichlorofluoro-methane	75-69-4	Methane, trichlorofluoro-	8010 8240	10 5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10

TABLE 3-2D.3 GROUNDWATER MONITORING LIST <sup>1</sup>				
Common Name <sup>2</sup>	CAS RN <sup>3</sup>	Chemical Abstracts Service Index Name <sup>4</sup>	Suggested Methods <sup>5</sup>	PQL (mg/ L) <sup>6</sup>
2,4,6- Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040 8270	5 10
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010 8240	10 5
O,O,O-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, O,O,O-triethyl ester	8270	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010 7910 7911	80 2,000 40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8240	5
Vinyl chloride	75-01-4	Ethene, chloro-	8010 8240	2 10
Xylene (total)	1330-20-7	Benzene, dimethyl-	8020 8240	5 5
Zinc	(Total)	Zinc	6010 7950	20 50

- (1) The requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.
- (2) Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
- (3) Chemical Abstracts Service registry number. Where 'Total' is entered, all species in the ground water that contain this element are included.
- (4) CAS index names are those used in the 9th Cumulative Index.
- (5) Suggested Methods refer to analytical procedure numbers used in USEPA Report SW-846 'Test Methods for Evaluating Solid Waste', third edition, November 1986. Analytical details can be found in SW-846 and in documentation on file at the USEPA. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the Standards.
- (6) Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in ground waters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the Standards.
- (7) Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor-1016 (CAS RN 12674-11-2), Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.



**[App 3-2D]**

- (8) This category contains congener chemicals, including tetrachlorodibenzo-p-dioxins (see also 2,3,7,8-TCDD), pentachlorodibenzo-p-dioxins, and hexachlorodibenzo-p-dioxins. The PQL shown is an average value for PCDD congeners.
- (9) This category contains congener chemicals, including tetrachlorodibenzofurans, pentachlorodibenzofurans, and hexachlorodibenzofurans. The PQL shown is an average value for PCDF congeners.

[Reference: 40 CFR 264, Appendix IX]

**APPENDIX 3-2E**

**(RESERVED)**

**APPENDIX 3-2F**  
**(RESERVED)**

**APPENDIX 3-2G**  
**(RESERVED)**

**APPENDIX 3-2H**  
**(RESERVED)**

**APPENDIX 3-2I**  
**(RESERVED)**

**APPENDIX 3-2J  
RECLAIMED WATER STANDARDS**

<b>STANDARDS</b>	<b>MONITORING</b>
<b>FECAL COLIFORM BACTERIA</b>	
Undetectable fecal coliform per 100 ml in greater than half of the previous 7 days samples with no single sample exceeding 14/100 ml.	Daily grab sample at entry point to the reclaimed water distribution system.
Undetectable fecal coliform per 100 ml in greater than half of all six monitoring locations in the distribution system with no single sample exceeding 14/100 ml.	Weekly grab samples at six monitoring locations within the reclaimed water distribution system.
<b>pH</b>	
6-9 units	Daily grab sample at entry point to the distribution system. Weekly grab samples at same six locations in the distribution system.
<b>TURBIDITY</b>	
Less than or equal to 2 NTU average (average of previous 7 days). A maximum of 5 NTU, 5% of the time during a 24 hour period.	Continuous on-line monitoring at the entry point to the distribution system. Record reading at least once per shift. Sample the same six locations daily in the reclaimed water distribution system.
<b>CHLORINE</b>	
≥ 0.5 ppm of total chlorine residual in 95% of monthly samples at the six locations within the distribution system. Minimum of 1 ppm at entry point to the distribution system to assure adequate disinfection.	Continuous on-line monitoring at the entry point to the distribution system. If the total chlorine residual level at any of the six locations in the distribution system measures less than 0.5 ppm, the location(s) shall be tested for fecal coliforms. Testing for fecal coliforms shall continue as long as the total chlorine residual level is below 0.5 ppm, or the test for fecal coliforms exhibits one or more fecal coliform per 100 ml. All positive tests shall be reported. Record reading at least once per shift. Sample six distribution locations daily within the water distribution system.
<b>BIOCHEMICAL OXYGEN DEMAND</b>	
Less than or equal to 10 mg/L (based on the 5-day test).	Weekly grab sample at entry point to the water distribution system.
<b>CHEMICAL COMPOUNDS</b>	
Monitor annually for any substance listed in Appendix 3-2K that has been measured to exceed either 50% of an MCL or wastewater effluent limitations through analysis conducted in accordance with the DEP(s) governing point sources and drinking water. If levels rise, investigate the sources by further analysis and eliminate the source.	Monitor for chemical compounds listed in Appendix 3-2K. Baseline monitoring: four consecutive quarterly samples at entry point to the reclaimed water distribution system. Repeat monitoring: annual sample at entry point to the reclaimed water distribution system.

**APENDIX 3-2K  
RECLAIMED WATER SYSTEM**

**CHEMICAL COMPOUND MONITORING LIST**

<b>TABLE 3-2K.1 ORGANICS</b>	
<b>ORGANIC ANALYTES</b>	<b>USEPA METHOD</b>
Ethylene Dibromide (EDB)/Dibromochloropropane (DBCP)	504.1
Organochlorine/Organo-Phosphorus Pesticides	507/508
Herbicides	515.1
Volatile Organics	524.2
Semivolatile Organics	525.2
Carbamates	531.1
Glyphosate	547
Endothall	548.1
Diquat/Paraquat	549.1

<b>TABLE 3-2K.2 INORGANICS</b>	
<b>INORGANIC ANALYTES</b>	<b>USEPA METHOD</b>
Aluminum*	200.8
Antimony	200.8
Arsenic*	200.8
Barium	200.8
Beryllium*	200.8
Cadmium*	200.8
Calcium	200.7
Chromium*	200.8
Copper*	200.8
Iron*	200.7
Lead*	200.8
Magnesium	200.7
Manganese*	200.8
Mercury	200.8
Nickel*	200.8
Selenium*	200.8
Silver	200.8
Sodium	200.7
Thallium	200.8
Zinc*	200.8



<b>TABLE 3-2K.2</b> <b>INORGANICS (CONTINUED)</b>	
<b>INORGANIC ANALYTES</b>	<b>USEPA METHOD</b>
Turbidity	180.1
Chloride	300
Sulfate	300
Alkalinity	310.1
Color	110.2
Cyanide	335.2
Fluoride*	300
MBAS (foaming agents)	425.1
Nitrite/Nitrate (as N)	353.2/353.1
TDS* (Total Dissolved Solids)	160.1
Specific Conductivity	120.1
TOC (Total Organic Carbon)	415.1
Gross Alpha and Beta	AB001
Tritium	H_002
Strontium-90	S9001
pH*	150.1
TKN* (Total Kjeldahl Nitrogen)	351.2
Potassium*	200.7
Phosphorous*	365.2
Boron*	200.7
Cobalt*	200.7
Lithium*	200.7
Molybdenum*	200.7
Vanadium*	200.7

\* Monitoring recommended in the USEPA's Guidelines for Water Reuse Manual, EPA/625/R-92/004, September 1992.

### **3-3 DRINKING WATER QUALITY**

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### **3-3.1 INTRODUCTION**

This section establishes the standards for drinking water quality that are applicable to activities of the U.S. Government at USAKA. The Standards are designed to ensure the availability of a safe supply of drinking water for personnel at USAKA. In addition to the specific procedural references in this section, the standards for drinking water quality shall incorporate all the applicable procedures that are in Part 2. The health-based standards in this section that are subject to the provisions of Section 2-22 are in Sections 3-3.5.1 through 3-5.6, 3-3.6.2.1, 3-3.6.2.3 and 3-3.6.4.

### **3-3.2 DERIVATION**

Section 3-3 of the Standards is derived from applicable sections of 40 CFR 141 through 143, which establish primary regulations for drinking water, regulations for implementation and enforcement, and secondary regulations for drinking water according to the provisions of the SDWA, as amended, and other related regulations and guidance applicable to public water supply systems.

### **3-3.3 SUMMARY OF CHANGES**

The standards for drinking water quality retain all health-based U.S. requirements. The Standards deviate from 40 CFR 141 through 143 only in that they clarify provisions and criteria applicable at USAKA and eliminate some discretionary guidelines for implementing the standards. The Standards are applicable to all public water systems at USAKA without exception, apply to water systems as if serving a population of 10,000 or more, and eliminate certain discretionary guidelines for frequency of sampling and monitoring. Because of the fragile nature of USAKA's supplies of fresh water and the potential for degradation, the standards for drinking water require filtration for all sources of surface water and groundwater and eliminate the determination of the need for filtration that is required by U.S. regulations.

### **3-3.4 GENERAL REQUIREMENTS**

#### **3-3.4.1 Document of Environmental Protection**

The installation, operation, or modification of treatment processes for any public water system shall be documented in a final DEP as required in Section 2-17.3.1(i). USAKA shall submit an NPA (Section 2-17.3.2) and obtain a signed DEP from the Appropriate Agencies before starting any activity that involves:

- (a) Construction of a new treatment facility or installation, operation of new treatment processes for a public water system, or
- (b) Significant modification of an existing treatment process for a public water system.

### **3-3.4.2 Operator Certification and Operation and Maintenance**

#### **(a) Operator Certification and Training**

USAKA personnel who operate, maintain, or manage equipment or processes for public water systems shall have the level of knowledge required for performing their tasks. Operators of drinking water treatment plants shall possess a valid certification from a recognized certification entity such as a State in the United States. USAKA shall meet the following personnel requirements for water treatment plant operations:

- (1) The operator with direct supervisory responsibility shall have a current Association of Boards of Certification (ABC) Class IV or comparable State certification.
- (2) Any person making process control/system integrity decisions at a water system shall be a certified operator.
- (3) A certified operator shall be either onsite or available at USAKA for each operating shift.

#### **(b) Operation and Maintenance**

USAKA shall prepare and use appropriate operation and maintenance practices to ensure that potable-water quality is maintained. At a minimum, the practices shall include:

- (1) Written procedures for backflow prevention and cross-connection control.
- (2) Emergency procedures
- (3) A vulnerability assessment program.
- (4) An effective maintenance and repair program.
- (5) Proper operation and maintenance of the distribution system including a distribution flushing program, maintenance of positive water pressure and disinfectant level throughout, appropriate pipe replacement and repair procedures, and proper maintenance of storage tanks and reservoirs.

### **3-3.4.3 Sanitary Surveys**

(a) A sanitary survey shall be conducted for all USAKA public water systems every five years. The sanitary survey shall address the following eight components:

- (1) Source

- (2) Treatment
- (3) Distribution system
- (4) Finished water storage
- (5) Pumps, pump facilities, and controls
- (6) Monitoring, reporting and data verification
- (7) System management and operation
- (8) Operator certification

#### **3-3.4.4 Approved Laboratories and Alternate Analytical Techniques**

##### **(a) Approved Laboratories**

(1) For determining compliance with the requirements for drinking water, samples shall be acceptable if they have been analyzed by a laboratory approved by USEPA, except that measurements for pH, temperature, turbidity and residual disinfectant concentrations are acceptable if they are performed by an operator meeting the requirements of Section 3-3.4.2(a) or by a qualified person under the direction of such an operator. Analytical results from laboratories certified by a State in the U.S. that has an USEPA-approved certification program are also acceptable for determining compliance

(2) Nothing in this section shall be construed to preclude USAKA from taking samples or from using the results from such samples for reasons other than determining compliance with the applicable requirements of Section 3-3.

##### **(b) Alternative Analytical and Sampling Techniques**

(1) Alternative analytical or sampling techniques, from those specified in Section 3-3, may be used to determine compliance with drinking water requirements only if they are substantially equivalent to the prescribed test in both precision and accuracy as it relates to determining compliance with a given MCL and have been accepted in accordance with Section 3-3.4.4(b)(2) below.

(2) Prior to using an alternative analytical or sampling technique to determine compliance with drinking water requirements, USAKA shall consult with the Appropriate Agencies and obtain written concurrence from USEPA.

(3) The use of the alternative analytical technique shall not decrease the frequency of required monitoring.

#### **3-3.4.5 Record Maintenance for Public Water Systems**

The following records shall comply with the general requirements of Section 2-13 and shall be retained on the premises of the public water treatment system or at a convenient location near the premises.

**[3-3.4.5(a)]**

(a) Records of bacteriological analyses performed according to Section 3-3 shall be kept for at least five years. Records of chemical analyses performed according to this section shall be kept for at least 10 years. Laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:

- (1) The date, place, and time of sampling and the name of the person who collected the sample.
- (2) Identification of the sample for whether it was a routine distribution-system sample, a check sample, a raw-water or process-water sample, or another special-purpose sample.
- (3) Date of analysis.
- (4) Laboratory and person responsible for performing the analysis.
- (5) The analytical technique or method used and the detection limit.
- (6) The results of the analysis: The results of drinking water analyses from sampling and monitoring conducted according to Section 3-3 shall be submitted to the Appropriate Agencies in compliance with Section 2-7.1.3(a).

(b) The records of action taken by USAKA to correct violations of requirements for drinking water shall be kept for at least 3 years after the last action taken for the particular violation.

(c) The copies of written reports, summaries, or communications relating to sanitary surveys of the system shall be kept for at least 10 years after completion of the sanitary survey.

### **3-3.5 DRINKING WATER QUALITY STANDARDS**

#### **3-3.5.1 Inorganic Contaminants**

##### **3-3.5.1.1 Maximum Contaminant and Action Levels for Inorganics**

Table 3-3.5.1 lists the MCLs and action levels for inorganic chemicals that are applicable to public water systems.

<b>TABLE 3-3.5.1</b> <b>MAXIMUM CONTAMINANT AND ACTION LEVELS FOR</b> <b>INORGANIC CONTAMINANTS</b>	
<b>Parameter</b>	<b>Maximum Contaminant Level (MCL) and Action Levels (milligrams per liter or as indicated)</b>
Antimony	0.006
Arsenic	0.05 [40 CFR 141.11(b)] until 22 Jan 06; 0.01 after 22 Jan 06 [40CFR141.62(b)]
Asbestos	7 million fibers/liter (longer than 10 µm)
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide (as free Cyanide)	0.2
Fluoride	2.0 <sup>(1)</sup>
Mercury (inorganic)	0.002
Nitrate	10 (as Nitrogen)
Nitrite	1 (as Nitrogen)
Total Nitrate and Nitrite	10 (as Nitrogen)
Selenium	0.05
Thallium	0.002
Lead	Action Level - 0.015
Copper	Action Level - 1.3
<sup>(1)</sup> This value is specific to USAKA and is not subject to revisions of 40 CFR 141.62.  References: 40 CFR, 141.62 The standards in this table are subject to the requirements in Section 2-22.	

### 3-3.5.1.2 Requirements for Sampling and Analysis of Inorganic Chemicals

Public water systems shall be monitored to determine compliance with the MCLs specified in Section 3-3.5.1.1.

(a) Monitoring shall be conducted as follows:

(1) At least one sample shall be collected at every entry point to the distribution system after the application of treatment or in the distribution system at a point that is representative of each source after treatment (hereafter called a "sampling point"). Each sample shall be collected at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(2) If a system draws water from more than one source and the sources are combined before distribution, sampling must be performed at an entry point to the



**[3-3.5.1.2(a)]**

distribution system during normal operating conditions when water is representative of all sources being used.

(3) The total number of samples that must be analyzed may be reduced [if specified in the DEP (Section 2-17.3)] by allowing compositing. Composite samples from a maximum of five sampling points are allowed. Samples must be composited in the laboratory. If the concentration in the composite sample is greater than or equal to the detection limit of any inorganic chemical, a follow-up sample must be taken within 14 days at each sampling point represented in the composite. These samples must be separately analyzed for the contaminants that were detected in the composite sample. Detection limits for each analytical method as listed in 40 CFR 141.23 (a)(4)(i) are incorporated here by reference.

(4) The frequency of monitoring shall be in accordance with Section 3-3.5.1.2(b) below.

(5) For systems that are being monitored more frequently than annually, compliance with MCLs for inorganic contaminants is determined by a running annual average for each sampling point. If the average at any sampling point is greater than the MCL, the system is out of compliance. If any one sample would cause the annual average to be exceeded, the system is out of compliance immediately. A system below the detection limit shall be calculated at zero for determining the annual average.

(6) For systems that are being monitored annually or less frequently, the system is out of compliance with the MCLs for inorganic contaminants if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required, compliance shall be determined on the basis of the average of the two samples.

(7) Analysis for compliance with the MCLs for inorganic contaminants shall be conducted using the methods specified in 40 CFR 141.23(k).

**(b) Monitoring Frequency**

**(1) Asbestos**

The frequency of monitoring for determining compliance with the MCL for asbestos shall be as follows, unless otherwise determined in accordance with Section 3-5.1.2(b)(1)(iii) below.

(i) Baseline monitoring: Each public water system is required to be sampled for asbestos once within three years of the effective date of these Standards and every nine years thereafter according to (A) or (B) below.

(A) A system that is vulnerable to asbestos contamination solely because of the nature of the source water shall be sampled in accordance with Section 3-3.5.1.2(a).

(B) For a system that is vulnerable to asbestos contamination solely because of corrosion in asbestos-cement pipe or because of both the source water supply and corrosion in asbestos-cement pipe, one sample shall be collected at a tap served by asbestos-cement pipe under conditions where asbestos is most likely to occur.

(ii) Repeat monitoring:

(A) If analytical results for the sample collected are less than the MCL for asbestos monitoring at the baseline frequency shall continue.

(B) If analytical results for the sample collected exceeds the MCL for asbestos quarterly monitoring shall be initiated in the next quarter after the exceedance occurred. USAKA may return to baseline monitoring only after the system is shown to be reliably and consistently below the MCL after a minimum of four quarters or until corrective measures have been completed.

(iii) USAKA may be relieved from baseline monitoring for asbestos if USAKA demonstrates to the Appropriate Agencies that the system is not vulnerable to asbestos contamination from the source water or from corrosion of asbestos-cement pipe due to the non-corrosive nature of the distributed water or the absence of asbestos containing materials in the distribution system.

(2) Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, Selenium and Thallium

The frequency of monitoring conducted to determine compliance with the MCLs for inorganic contaminants other than those separately described elsewhere (i.e., asbestos, nitrite/nitrate, and lead/copper) shall be as follows:

(i) Baseline monitoring: For each public water system, one sample shall be collected annually at each sampling point [Section 3-3.5.1.2(a)], for three years.

(ii) Repeat monitoring:

(A) If analytical results from the baseline monitoring are less than the MCL USAKA shall repeat monitoring for that contaminant no less than once every three years.

(B) Any sampling point that exceeds the MCL must be monitored quarterly for that contaminant beginning in the quarter after the exceedance occurred. USAKA may return to the baseline monitoring frequency after four consecutive quarters reveal that the sampling point is below the MCL or corrective measures have been completed to correct the exceedance.

(iii) Confirmation samples:

[3-3.5.1.2(b)]

(A) If the results of sampling for inorganic contaminants indicate that the MCL has been exceeded, one additional sample shall be collected as soon as possible after the initial sample was collected, but not later than two weeks after being advised of the exceedance, at the same sampling point.

(B) If a required confirmation sample is collected for a contaminant, the results of the initial and confirmation samples shall be averaged. The resulting average shall be used to determine compliance.

(3) Nitrate/Nitrite - N

The frequency of monitoring for determining compliance with the MCLs for total nitrate/nitrite-N, nitrate and nitrite shall be as follows. Compliance with the MCLs for nitrate, nitrite, and total nitrate/nitrite-N is determined on the basis of one sample if the levels of these contaminants are below the MCLs. If the levels of nitrate, nitrite, or total nitrate/nitrite-N in the initial sample exceed the MCLs, a confirmation sample is required, and compliance shall be determined according to the average of the initial sample and the confirmation sample.

(i) Baseline monitoring: Each sample point must be sampled for total nitrate/nitrite-N for consecutive quarters.

(ii) Repeat monitoring:

Unless otherwise stated in a final DEP, repeat monitoring shall be performed as follows:

(A) If analytical results from the four consecutive quarters for a sampling point are less than 0.5 mg/L (50 percent of the nitrite MCL) repeat monitoring shall consist of one total nitrate/nitrite-N sample collected annually. Annual sampling shall be collected during the quarter(s) that previously resulted in the highest analytical result.

(B) Any sampling point with an analytical result greater than or equal to 0.5 mg/L (50 percent of the nitrite MCL) must begin quarterly sampling for nitrate and nitrite separately in the next quarter.

(aa) Quarterly monitoring for nitrite will continue if nitrite values are greater than or equal to 0.5 mg/L (50 percent of the nitrite MCL). If four consecutive analytical results are less than 0.5 mg/L (50 percent of the MCL), or are consistently and reliably below the nitrite MCL, repeat monitoring for the sampling point shall be as specified in 3-3.5.1.2(b)(3)(ii)(A).

(bb) Quarterly monitoring for nitrate will continue if nitrate values are greater than or equal to 5.0 mg/L (50 percent of the nitrate MCL). If four consecutive analytical results are less than 5.0 mg/L (50 percent of the MCL), or are consistently and

reliably below the nitrate MCL, repeat monitoring for the sampling point shall be as specified in 3-3.5.1.2(b)(3)(ii)(A).

(iii) Confirmation samples:

If sampling results for nitrate, nitrite, or total nitrate/nitrite-N indicate that the MCL has been exceeded, a confirmation sample shall be collected no later than 24 hours after USAKA is advised of the analytical results of the first sample. If USAKA is unable to comply with the 24-hour sampling requirement, USAKA must notify the consumers served by the system in accordance with the requirements of Section 3-3.8.1. If USAKA exercises this option, a confirmation sample must be collected and analyzed no later than two weeks after public notification is issued about the analytical results of the first sample.

(4) Lead and Copper

(i) The action level for lead is exceeded if the concentration of lead in more than 10 percent of tap-water samples collected during any monitoring period is higher than 0.015 mg/l.

(ii) The action level for copper is exceeded if the concentration of copper in more than 10 percent of tap-water samples collected during any monitoring period is higher than 1.3 mg/l.

(iii) Sampling sites shall be representative of the entire water system and shall include a minimum of 5 percent of the entire system's service connections.

(iv) All tap samples collected shall be first-draw samples. USAKA shall collect each first-draw tap sample from the same sampling site from which it collected a previous sample. For residential housing, first-draw samples shall be collected from the cold-water tap in the kitchen or the bathroom. For nonresidential buildings, first-draw samples shall be collected from an interior tap from which water is typically drawn for consumption.

(v) The frequency of monitoring for determining compliance with the action levels for lead and copper shall be as follows:

(A) Monitoring shall be performed during six-month periods.

(B) If the lead and copper values of two consecutive six-month monitoring periods are demonstrated to be below the action levels, the frequency of sampling can be reduced to once per year.

(C) For systems that exceed the action levels for lead and/or copper, USAKA shall continue monitoring for lead and/or copper every six months until corrective measures are implemented and monitoring results demonstrate that the lead and copper concentrations are below the action levels. Additionally, USKA shall:

[3-3.5.1.2(b)]

(aa) In consultation with the Appropriate Agencies, conduct corrosion control studies and implement optimal corrosion control treatment within 24 months of exceeding the lead and/or copper action levels. Guidance for corrosion control and studies is in the *EPA Lead and Copper Rule Guidance Manual Volume II: Corrosion Control Treatment*. Source water treatment may be necessary in those instances where lead and/or copper levels in the source water contribute to the levels at consumer taps.

(bb) Perform additional monitoring consisting of the following within 30 days of exceeding the lead or copper action levels:

(I) Source water analysis at a representative site(s) for lead and/or copper on a one-time basis prior to treatment, and

(II) Water quality parameters (pH, alkalinity, calcium, conductivity, temperature, orthophosphate, and silica (if applicable)) at the entry point and at a representative site in the distribution system. Analysis of water quality parameters shall then continue at the specified two locations concurrently with the continued lead and/or copper monitoring. Guidance is in the *EPA Lead and Copper Rule Guidance Manual: Volume I - Monitoring*.

### **3-3.5.1.3 Special Monitoring for Sodium**

(a) USAKA shall annually collect and analyze one sample per public water system treatment plant at the entry point to the distribution system for determining concentration levels of sodium. The minimum number of samples required shall be based on the number of treatment plants used by the system.

(b) Analyses for sodium shall be performed in accordance with the specifications of 40 CFR 141.41(d).

### **3-3.5.1.4 Special Monitoring for Corrosivity Characteristics**

(a) USAKA shall collect samples from each public water system at a representative entry point to the water-distribution system for determining the corrosivity characteristics of the water.

(1) Each quarter, USAKA shall collect two samples per plant for analysis.

(2) Determination of the corrosivity characteristics of the water shall include measurement of pH, calcium hardness, alkalinity, temperature, and total dissolved solids and calculation of the Langelier Index. Only one round of samples shall be used in determining corrosivity characteristics.

(b) Analyses for determining the corrosivity of the water shall be performed as specified in *Standard Methods for the Examination of Water and Wastewater*, current edition.

(c) USAKA shall identify whether the following construction materials are in distribution systems for public water systems and shall report the following information in writing to the Appropriate Agencies by January 1, 2003 and every three years thereafter:

- (1) Lead piping, solder, caulking, interior lining of distribution mains, alloys, and home plumbing.
- (2) Copper piping and alloys, service lines, and home plumbing.
- (3) Galvanized piping, service lines, and home plumbing.
- (4) Ferrous piping materials, such as cast iron and steel.
- (5) Asbestos cement pipe.

### **3-3.5.2 Organic Chemicals other than Disinfectants and Disinfection Byproducts**

#### **3-3.5.2.1 Maximum Contaminant Levels**

(a) The MCLs for organic chemicals are listed in Table 3-3.5.2.1. The MCLs for the listed organic chemicals apply to all public water systems. Compliance with the MCLs in Table 3-3.5.2.1 is calculated according to the requirements for sampling and analysis of organic chemicals in Section 3-3.5.2.2.

(b) The techniques shown in Table 3-3.6.4.1 (in Section 3-3.6.4.1) are hereby identified as the best technology, treatment techniques, or other means available for achieving compliance with the MCLs for the synthetic organic contaminants listed in Table 3-3.5.2.1

(c) In lieu of MCLs, treatment techniques are established for acrylamide and epichlorohydrin as follows:

For each public water system where these chemicals are used, USAKA shall certify annually in writing (using third-party or manufacturer's certification) to the Appropriate Agencies that when these chemicals are used, the combination (or product) of dose and monomer level does not exceed the following levels:

Acrylamide = 0.05 percent dosed at 1 ppm (or equivalent)

Epichlorohydrin = 0.01 percent dosed at 20 ppm (or equivalent)

<b>TABLE 3-3.5.2.1</b> <b>MAXIMUM CONTAMINANT LEVELS FOR ORGANIC CONTAMINANTS</b>	
<b>Contaminant</b>	<b>Maximum Contaminant Level (MCL) (milligrams per liter or as indicated)</b>
<b>VOLATILE ORGANIC COMPOUNDS (VOC)</b>	
Benzene	0.005
Carbon tetrachloride	0.005
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
cis-1,2-Dichloroethylene	0.07
1,2-Dichloropropane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
Dichloromethane	0.005
1,2,4-Trichlorobenzene	0.07
para-Dichlorobenzene	0.075
1,1,1-Trichloroethane	0.2
Trichloroethylene	0.005
Vinyl chloride	0.002
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
trans-1,2-Dichloroethylene	0.1
Xylenes (total)	10
1,1,2-Trichloroethane	0.005
<b>PESTICIDES &amp; SYNTHETIC ORGANIC CHEMICALS (SOC)</b>	
Alachlor	0.002
Aldicarb	0.003
Aldicarb sulfoxide	0.004
Aldicarb sulfone	0.002
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
Dibromochloropropane (DBCP)	0.0002
2,4-D	0.07
Endrin	0.002
Ethylene dibromide (EDB)	0.00005
Benzo(a)pyrene	0.0002
Dalapon	0.2
Di(2-ethylhexyl) adipate	0.4
Di(2-ethylhexyl) phthalate	0.006

<b>TABLE 3-3.5.2.1</b> <b>MAXIMUM CONTAMINANT LEVELS FOR ORGANIC CONTAMINANTS</b>	
<b>Contaminant</b>	<b>Maximum Contaminant Level (MCL) (milligrams per liter or as indicated)</b>
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Lindane	0.0002
Methoxychlor	0.04
Polychlorinated biphenyls (PCBs)	0.0005
Pentachlorophenol	0.001
Toxaphene	0.003
2,4,5-TP	0.05
Glyphosate	0.7
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Oxymal (Vydate)	0.2
Picloram	0.5
Simazine	0.004
2,3,7,8-TCDD (Dioxin)	$3 \times 10^{-8}$
Acrylamide	Treatment Technique
Epichlorohydrin	Treatment Technique
Reference: 40 CFR, 141.61(a) & (c)	
The standards in this table are subject to the requirements in Section 2-22.	

### 3-3.5.2.2 Sampling and Analytical Requirements for Organic Chemicals

#### (a) Volatile Organic Compounds

(1) Analysis for determining compliance with the MCLs for Volatile Organic Compounds (VOC) in Section 3-3.5.2.1 shall be performed as follows:

(i) At least one sample shall be collected at points in the distribution system that are representative of each source or at each entry point to the distribution system (called a "sampling point") after treatment. If conditions warrant, additional sampling points may be designated within the distribution system or at the consumer's tap, whichever permits determining consumer exposure more accurately. Each sample must be collected at the same sampling point unless conditions make another sampling point more representative of each source, the treatment plant, or the distribution system.



[3-3.5.2.2(a)]

(ii) If the system draws water from more than one source and the sources are combined before distribution, the system must be sampled at an entry point to the distribution system during normal operating conditions when water representative of all sources is being used.

(iii) If documented in a final DEP for a public water system, the total number of samples that must be analyzed may be reduced by allowing compositing. Composite samples from a maximum of five sampling points are allowed. Samples must be composited in the laboratory and must be analyzed within 14 days of collection.

(A) If the concentration in the composite sample is greater than 0.0005 mg/l for any contaminant, a follow-up sample from each sampling point represented in the composite must be taken and separately analyzed within 14 days.

(B) If duplicates of the original sample taken from each sampling point used in the composite are available, USAKA may use them instead of resampling. The duplicate must be analyzed and the results must be reported within 14 days of collection.

(C) Compositing samples before gas chromatography (GC) and GC/mass spectroscopy analysis shall be performed in accordance with 40 CFR 141.24(f)(14)(iv) and (v).

(iv) Compliance with the MCLs shall be determined on the basis of the analytical results obtained at each sampling point.

(A) For systems that are monitoring more frequently than annually, compliance is determined by a running annual average of all samples collected at each sampling point. If the annual average of any sampling point is greater than the MCL, the system is out of compliance. If the initial sample or a subsequent confirmation sample would cause the annual average to be exceeded, the system is out of compliance immediately. All samples below the detection limit shall be calculated as zero for determining the annual average.

(B) If monitoring is conducted annually or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required, determination of compliance will be based on the average of two samples.

(v) Analysis shall be conducted using the USEPA methods listed in 40 CFR 141.24(e).

(vi) Each laboratory performing analyses to determine compliance with applicable MCLs must determine the method detection limit (MDL) at which it is capable of detecting VOCs. The acceptable MDL is 0.0005 mg/l.

## (2) Monitoring Frequency

If USAKA does not detect any contaminant and the public water system is deemed nonvulnerable, using the criteria in Section 3-3.5.2.2(a)(2)(ii)(C), USAKA shall monitor at the frequency stated in the final DEP for the system.

(i) Baseline monitoring: USAKA must sample each sample point for four consecutive quarters.

(ii) Repeat monitoring:

(A) If results from the four consecutive quarters for a sampling point are less than 0.0005 mg/L for all contaminants USAKA may reduce monitoring to annually for that sampling point.

(B) If results from any of the four consecutive quarters for a sampling point detect a contaminant concentration at or above 0.0005 mg/L, that sampling point must be monitored quarterly. USAKA may reduce quarterly monitoring to annually if at least four consecutive quarters reveal that the sampling point is consistently below the contaminant's MCL. Annual samples must be collected during the quarter that previously yielded the highest analytical result. USAKA must complete at least three annual samples with no detections of contaminants before becoming eligible for further reductions in monitoring as described in Section 3-3.5.2.2(a)(2)(ii)(C) below.

(C) Reductions to the repeat monitoring frequencies may be reduced, if specified in a final DEP, based upon an evaluation of the following factors:

(aa) No previous use of the contaminant, including transport, storage, or disposal, within the zone of influence of the system.

(bb) If previous use of the contaminant is unknown or if the contaminant has been used previously, the following factors shall be used to determine whether reductions in repeat monitoring frequencies are appropriate:

(I) Previous analytical results.

(II) The environmental persistence and transport characteristics of the contaminants.

(III) The proximity of the system to a potential point source or nonpoint source of contamination.

(IV) Point sources, including spills and leaks of chemicals at or near a water treatment facility; at manufacturing, distribution, or storage facilities; or from hazardous and solid waste landfills and other facilities for waste handling or treatment.

(V) The number of people served by the water system and the proximity of a smaller system to a larger system.

(VI) How well the source water is protected against contamination, such as depth of well, soil type, and watershed protection.

(iii) Confirmation Samples

If the results of sampling indicate the presence of a contaminant, a confirmation sample shall be collected within two weeks of receipt of results. If a confirmation sample is required, the result must be averaged with the first sampling result, and the average shall be used for determining compliance USAKA, in consultation with the USEPA and RMIEPA, has the discretion to delete the results of obvious sampling errors from this calculation.

(b) Synthetic Organic Chemicals and Pesticides

(1) Analysis for determining compliance with the MCLs for the pesticides and synthetic organic chemicals (SOC) listed in Section 3-3.5.2.1 shall be conducted as follows:

(i) At least one sample shall be collected at points in the distribution system that are representative of each source or at each entry point to the distribution system (called a "sampling point") after treatment. If conditions warrant, additional sampling points within the distribution system or at the consumer's tap that more accurately represent consumer exposure may be designated. Each sample shall be taken at the same sampling point unless conditions make another sampling point more representative of each source, the treatment plant, or the distribution system.

(ii) If the system draws water from more than one source and the sources are combined before distribution, sampling must be performed at an entry point to the distribution system during normal operating conditions when water representative of all sources is being used.

(iii) The total number of samples of a public water system that must be analyzed may be reduced by compositing, if documented in a final DEP for the system. Composite samples from a maximum of five sampling points are allowed. Samples shall be composited in the laboratory and shall be analyzed within 14 days of being collected.

(A) If the concentration in the composite sample reveals one or more of the SOC's listed in Table 3-3.5.2.1, a follow-up sample shall be taken and separately analyzed within 14 days from each sampling point represented in the composite.

(B) If duplicates of the original sample taken from each sampling point used in the composite are available, the duplicates may be used instead of samples from resampling. The duplicates shall be analyzed, and the results shall be reported within 14 days of collection.

(C) Compositing among different systems may be permitted if the five-sample limit is maintained.

(iv) Compliance with the MCLs shall be determined on the basis of the analytical results obtained at each sampling point.

(A) For systems being monitored more often than annually, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, the system is out of compliance. If the initial sample or a subsequent confirmation sample would cause the annual average to be exceeded, the system is out of compliance immediately. All samples below the detection limit shall be calculated as zero for determining the annual average.

(B) If monitoring is conducted annually or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required, determination of compliance shall be based on the average of two samples.

(v) Analysis for the contaminants listed in Section 3-3.5.2.1 shall be conducted using the USEPA methods listed in 40 CFR 141.24(e).

(vi) Each laboratory must determine the method detection limit (MDL) at which it is capable of detecting pesticides and SOCs. The acceptable MDLs are contained in 40 CFR 141.24(h)(18).

## (2) Monitoring Frequency

The frequency of monitoring for determining compliance with the MCLs for synthetic organic chemicals and pesticides listed in Section 3-3.5.2.1 shall be as follows:

(i) Baseline monitoring: Each system must be sampled at each sampling point for four consecutive quarters.

(ii) Repeat monitoring.

(A) If results from the four consecutive quarters for a sample point do not detect any contaminant at or over the contaminant's detection limit, USAKA may repeat monitoring once every three years for that sampling point.

[3-3.5.2.2(b)]

(B) If results for any of the four quarters for a sampling point detect any contaminant at or over the detection limits identified for those contaminants in 40 CFR Section 141.24(h)(18), that sampling point must be monitored quarterly. USAKA may reduce quarterly monitoring to annually if at least four consecutive quarters reveal that the sampling point is consistently below the contaminant's MCL. Annual samples must be collected during the quarter that previously yielded the highest analytical result. USAKA must complete at least three annual samples with no detections before becoming eligible for further reductions in monitoring as described in Section 3-3.5.2.2(b)(ii)(D) below.

(C) If one or more of the following compounds are detected, then subsequent monitoring must include analysis for all related contaminants: aldicarb, aldicarb sulfone, aldicarb sulfoxide, heptachlor and heptachlor epoxide.

(D) Reductions to the monitoring frequencies specified in Section 3-3.5.2.2(b)(2)(ii)(A) through (B) may be reduced, if specified in a final DEP for the affected system, based upon an evaluation of the following factors:

(aa) No previous use (including transport, storage, and disposal) of the contaminant within the zone of influence of the system.

(bb) If previous use of the contaminant is unknown or it has been used previously, the following factors shall be used to determine whether reduction in repeat monitoring frequencies will be allowable:

(I) Previous analytical results.

(II) Proximity of the system to potential point or nonpoint sources of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities or from hazardous and solid waste landfills and other facilities for handling and treating waste. Nonpoint sources include the use of pesticides to control insect and weed pests and other land-application uses.

(III) Number of people served by the water system and proximity of a smaller system to a larger system.

(IV) The extent to which the source water is protected against contamination because of various factors, such as depth of well, soil type, and watershed protection.

(V) The environmental persistence and transport of the pesticide or the PCBs.

(VI) Elevated nitrate levels at the water-supply source.

(VII) PCBs in equipment used in the production, storage, or distribution of water (for example, PCBs used in pumps, transformers).

(iii) Confirmation Samples

If the results of sampling detect the presence of any contaminant, a confirmation sample shall be collected within two weeks of receipt of results. If a confirmation sample is required, the result shall be averaged with the first sampling result, and the average shall be used for determining compliance, USAKA, in consultation with the USEPA and RMIEPA, has the discretion to delete the results of obvious sampling errors from this calculation.

### **3-3.5.3 Disinfectants and Disinfection Byproducts and Precursors**

#### **3-3.5.3.1 Maximum Contaminant Levels and Maximum Residual Disinfectant Levels**

(a) The MCLs and MRDLs for disinfectants and disinfection byproducts are listed in Table 3-3.5.3.1. The MCLs and MRDLs apply to any public water system that adds a disinfectant (oxidant) to the water. Compliance with the MCLs or MRDLs in Table 3-3.5.3.1 is determined according to the sampling and analysis requirements given in Section 3-3.5.3.2.

(b) If USAKA is installing GAC or membrane technology to comply with the total trihalomethane MCL; the haloacetic acids (five) MCL; the bromate MCL; or the chlorite MCL that are effective on 1 January 2002, the effective date may be extended to no later than 31 December 2003, if documented in a completed DEP for the affected public water system.

(c) Notwithstanding the MRDLs for chlorine and chloramines, USAKA may increase the residual level of these substances above the MRDL for a limited time necessary to protect the public health for specific microbiological contamination problems such as distribution line breaks, storm run-off events, source water contamination events, or cross-connection events.

**TABLE 3-3.5.3.1**  
**MAXIMUM CONTAMINANT LEVELS (MCL)**  
**AND**  
**MAXIMUM RESIDUAL DISINFECTANT LEVELS (MRDL)**  
**For Disinfectants and Disinfection Byproducts**

<b>Disinfectant or Byproduct</b>	<b>MCL or MRDL (milligrams/liter)</b>
Total trihalomethanes (TTHM)	0.10 until 1 Jan 02, 0.080 after 1 Jan 02 (MCL)
Haloacetic acids (five) (HAA5)	0.060 after 1 Jan 02 (MCL)
Bromate	0.010 after 1 Jan 02 (MCL)
Chlorite	1.0 after 1 Jan 02 (MCL)
Chlorine (measured as free chlorine)	4.0 (as Cl <sub>2</sub> ) after 1 Jan 02 (MRDL)
Chloramines (measured as total chlorine)	4.0 (as Cl <sub>2</sub> ) after 1 Jan 02 (MRDL)
Chlorine dioxide	0.8 (as ClO <sub>2</sub> ) after 1 Jan 02 (MRDL)
Reference: 40CFR141.64 and 141.165	

### **3-3.5.3.2 Requirements for Sampling and Analysis for Disinfectants and Disinfection Byproducts**

The sampling and analytical requirements of this section become effective upon the effective date for the MCL or MRDL for the subject substance.

#### **(a) Total Trihalomethanes and Haloacetic Acids (five)**

Public water systems that add a disinfectant (oxidant) to the water in any part of the treatment process for drinking water shall be analyzed for TTHMs and HAA5s in accordance with this section. Sampling and analysis shall be conducted in accordance with the applicable methods listed in 40 CFR 141.131.

(1) Analyses for TTHMs and HAA5s shall be performed at quarterly intervals on at least four water samples for each treatment plant used by the system. At least 25 percent of the samples shall be taken at locations within the distribution system that reflect the maximum residence time of the water in the system. The remaining 75 percent shall be taken at representative locations in the distribution system, taking into account different sources of water and different treatment methods. For each sampling event, all samples shall be collected within a 24-hour period. The results of all analyses each quarter shall be arithmetically averaged. All collected samples shall be used in computing the average unless the analytical results are invalidated for technical reasons.

(2) Compliance with the TTHM and HAA5 MCLs shall be determined on the basis of a running annual average of quarterly samples. If the average of samples covering any

12-month period exceeds the TTHM or HAA5 MCL, the system is in violation of the MCL.

(3) Reduced monitoring: If at a public water system, the running annual average for TTHM is less than 0.040 mg/l and for HAA5 is less than 0.030 mg/l, USAKA may reduce the monitoring to one sample per quarter at a point in the system reflecting maximum residence and during the quarter of the highest observed concentrations. If, the average of all samples taken in the year exceeds 0.060 mg/l for TTHM or 0.045 mg/l for HAA5, USAKA shall return to quarterly monitoring in accordance with Section 3-3.5.3.2(a)(1) above.

(b) Chlorite

Public water systems at which chlorine dioxide is utilized for disinfection or oxidation must be monitored for chlorite according to this section. Sampling and analysis shall be conducted in accordance with the applicable methods listed in 40 CFR 141.131.

(1) Routine monitoring: USAKA shall take daily samples at the entrance to the distribution system. If any daily sample exceeds the chlorite MCL, additional samples shall be taken in the distribution system the day after the exceedence at: as close as possible to the first point of human consumption; a location representative of the average residence time; and a location representing maximum residence time. If the arithmetic average of the three distribution system samples exceed the chlorite MCL the system is in violation of the MCL.

(2) Monthly monitoring: USAKA shall take monthly samples in the distribution system at the locations identified in Section 3-3.5.3.2(b)(1) above. If distribution samples have been taken according to Section 3-3.5.3.2(b)(1) above, those samples may be used to meet this requirement. If the arithmetic average of the three distribution system samples exceed the chlorite MCL the system is in violation of the MCL.

(3) Reduced monitoring: The sampling requirements in Section 3-3.5.3.2(b)(1) shall not be reduced. The monthly distribution system sampling required by Section 3-3.5.3.2(b)(2) may be reduced by USAKA to a quarterly frequency, if, after a year of monitoring, no individual distribution sample taken according to either Section 3-3.5.3.2(b)(1) or (2) exceeds the chlorite MCL. USAKA may continue reduced sampling for the affected public water system until such time as an individual sample exceeds the chlorite MCL, at which time USAKA shall return to the monitoring requirements of Section 3-3.5.3.2(b)(2) above.



[3-3.5.3.2(c)]

(c) Bromate

Public water systems at which ozone is utilized for disinfection or oxidation must be monitored for bromate according to this section. Sampling and analysis shall be conducted in accordance with the applicable methods listed in 40 CFR 141.131.

(1) Routine monitoring: USAKA shall take monthly samples at the entrance to the distribution system at each treatment plant in the system using ozone. If the running annual arithmetic average of all samples taken in the preceding twelve months, including any bromate samples that may be taken in accordance with Section 3-3.5.3.2(c)(2) below, exceeds the bromate MCL, the public water system is in violation of the MCL.

(2) Reduced monitoring: USAKA may reduce bromate monitoring to quarterly of finished water, if USAKA determines that the source water bromide concentration is reliably and consistently less than 0.05 mg/l based upon no less than twelve months of monthly source water samples for bromide. To continue with reduced monitoring, USAKA must continue with monthly source water monitoring for bromide and quarterly computation of the running, annual arithmetic average of source water bromide concentrations. If the source water running annual average bromide concentration is equal to or greater than 0.05 mg/l, USAKA shall return to monthly bromate monitoring according to Section 3-3.5.3.2(c)(1) above.

(d) Chlorine and Chloramines

Public water systems at which chlorine or chloramines are utilized for disinfection or oxidation must be monitored for chlorine and chloramines according to this section. Sampling and analysis shall be conducted in accordance with the applicable methods listed in 40 CFR 141.131.

(1) USAKA shall monitor for residual disinfectant levels at the same places and at the same times as total coliforms are sampled for (Section 3-3.5.5). This monitoring frequency shall not be reduced. USAKA may use results collected under Section 3-3.6.2.1(c) for compliance with this requirement.

(2) If the running, annual arithmetic average of monthly averages of all samples taken during the preceding twelve months exceeds the MRDL for chlorine or chloramines, the public water system is in violation of the MRDL.

(3) If USAKA changes between the use of chlorine and chloramines, compliance with the MRDL is calculated using the monitoring results for both chlorine and chloramines.

(e) Chlorine dioxide

Public water systems at which chlorine dioxide is utilized for disinfection or

oxidation must be monitored for chlorine dioxide according to this section. Sampling and analysis shall be conducted in accordance with the applicable methods listed in 40 CFR 141.131.

(1) USAKA shall take daily samples for chlorine dioxide at the point of entry to the distribution system. If a daily sample exceeds the chlorine dioxide MRDL, USAKA shall on the day following the exceedence take additional samples in accordance with Section 3-3.5.3.2(e)(1)(i) or (ii) below.

(i) For systems where chlorine, chloramines or chlorine dioxide are used to maintain disinfectant levels in the distribution system and have no disinfectant addition points after the entrance to the distribution system, USAKA shall take three samples as close as possible to the first point of human consumption at intervals of at least six hours; or

(ii) For systems where chlorine is used to maintain disinfectant levels in the distribution system and there are one or more disinfectant addition points after the entrance to the distribution system, USAKA shall take three samples as follows: as close to the first point of human consumption as possible; in a location representative of average residence time; and at a location representing maximum residence time.

(2) Compliance with the MRDL for chlorine dioxide is determined as follows:

(i) If a daily sample and one or more of the three samples, taken in accordance with Section 3-3.5.3.2(e)(1), exceed the MRDL, the system is in acute violation (e.g. Tier 1) of the chlorine dioxide MRDL; or

(ii) If two consecutive daily samples exceed the MRDL and all the distribution samples, taken in accordance with Section 3-3.5.3.2(e)(1)(i) or (ii), are below the MRDL, the system is in non-acute violation (e.g., Tier 2) of the chlorine dioxide MCL.

(3) Monitoring requirements for chlorine dioxide shall not be reduced.

### **3-3.5.3.3 Monitoring Requirements for Disinfection Byproduct Precursors**

(a) The requirements in this section become effective 1 January 2002.

(b) For public water systems employing conventional filtration treatment, USAKA must monitor each treatment plant for TOC at a location immediately after filtration and that is representative of the treated water. Monitoring must also be conducted for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, USAKA must monitor for alkalinity in the source water prior to any treatment. USAKA must take one paired sample and one source water alkalinity sample per month per plant at a time

representative of normal operating conditions and influent water quality. Sampling and analysis for TOC and alkalinity must be conducted in accordance with the methods listed in 40 CFR 141.131.

(c) For public water systems employing conventional filtration treatment with an average treated water TOC of less than 2.0 mg/l for two consecutive years, or less than 1.0 mg/l for one year, USAKA may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. USAKA must revert to the monitoring frequency specified in Section 3-3.5.3.3(b) in the month following the quarter when the annual average treated water TOC  $\geq$  2.0 mg/l.

### **3-3.5.4 Turbidity Requirements**

Turbidity requirements for water systems using surface water in whole or in part are defined by treatment techniques and associated allowable turbidity levels.

#### **3-3.5.4.1 Filtration**

Each public water system must provide treatment consisting of both disinfection, as specified in Section 3-3.6.2 and a filtration treatment that complies with the following requirements.

(a) Conventional filtration treatment or direct filtration

(1) For systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water shall be less than or equal to 0.5 NTU in at least 95 percent of the measurements taken each month. Effective 1 January 2002, the turbidity level of representative samples of a system's combined filtered water prior to chemical addition shall be less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month,

(2) Effective 1 January 2002, the turbidity level of representative samples of a system's filtered water shall at no time exceed 1 NTU.

(3) Effective 1 January 2002, for any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart, USAKA shall report the filter number, the turbidity measurement, and the date(s) on which the exceedence occurred to the Appropriate Agencies. In addition, USAKA shall either produce a filter profile for the filter within 7 days of the exceedence (if USAKA is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedence.

(4) Effective 1 January 2002, for any individual filter that has a measured turbidity level of greater than 0.5 NTU in two consecutive measurements taken 15 minutes apart at the end of the first four hours of continuous filter operation after the filter has been

backwashed or otherwise taken offline, USAKA shall report the filter number, the turbidity, and the date(s) on which the exceedence occurred to the Appropriate Agencies. In addition, USAKA shall either produce a filter profile for the filter within 7 days of the exceedence (if USAKA is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedence.

(5) Effective 1 January 2002, for any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of three consecutive months, USAKA shall report the filter number, the turbidity measurement, and the date(s) on which the exceedence occurred to the Appropriate Agencies. In addition, USAKA shall conduct a self-assessment of the filter within 14 days of the exceedence and report that the self-assessment was conducted. The self-assessment shall consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.

(6) Effective 1 January 2002, for any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of two consecutive months, USAKA shall report the filter number, the turbidity measurement, and the date(s) on which the exceedence occurred to the Appropriate Agencies. In addition, USAKA shall arrange for the conduct of an external comprehensive performance evaluation no later than 30 days following the exceedence and have the evaluation completed and submitted to the Appropriate Agencies no later than 90 days following the exceedence.

(b) Slow sand filtration

For systems using slow sand filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month. The turbidity level in representative samples of a public water system's treated water shall at no time exceed 5 NTU.

(c) Diatomaceous-earth filtration

For systems using diatomaceous-earth filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month. The turbidity level in representative samples of a public water system's treated water shall at no time exceed 5 NTU.

(d) Other approved filtration technologies

USAKA may use a filtration technology not listed in Sections 3-3.5.4.1(a) through (c) if it demonstrates through pilot-plant studies or other means that the

[3-3.5.4.1(e)]

alternative filtration technology, in combination with disinfection treatment that meets the requirements of Section 3-3.6.2, consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. The requirements of Section 3-3.5.4.1(b) shall apply to public water systems using filtration techniques meeting the requirements of this section. The turbidity level in representative samples of a public water system's treated water shall at no time exceed 5 NTU.

(e) Systems not using approved filtration treatment techniques

Systems not using an approved filtration treatment technique, in accordance with Sections 3-3.5.4.1(a) through (d) above, must comply with the following turbidity levels until such time as an approved filtration technique is installed and placed in operation. The turbidity level of representative samples of a system's filtered water must be less than or equal to 1.0 NTU in at least 95 percent of the measurements taken each month. The turbidity level in representative samples of a public water system's treated water shall at no time exceed 5 NTU. The final DEP for any public water system not utilizing an approved filtration technique shall include a schedule and deadline to install approved filtration and place it in operation.

(f) Water systems employing conventional or direct filtration treatment and recycling spent filter backwash water, thickener supernatant, or liquids from dewatering processes must meet the following requirements by 8 June 2004:

(1) Recycled flows must be returned to a point prior to all conventional or direct treatment processes employed by the water system.

(2) USAKA must collect and retain on file the following information:

(i) A plant schematic showing the origin of all recycle flows, the hydraulic conveyance used to transport them, and the location where they are recycled back into the plant.

(ii) Typical recycle flow in gallons per minute (gpm), highest observed plant flow experienced in the previous year (gpm), and design flow for the treatment plant (gpm).

(iii) List of all recycle flows and the frequency with which they are returned.

(iv) Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.

(v) Typical filter run length and a written summary of how filter run length is determined (headloss, turbidity, time etc.).

(vi) The type of treatment provided for the recycle flow.

(vii) Data on the physical dimensions of the equalization and/or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed from treatment units where such units are used.

#### **3-3.5.4.2 Turbidity Monitoring**

##### **(a) Analytical Requirements**

Analysis for compliance with turbidity requirements shall be conducted in accordance with 40CFR141.74(a).

##### **(b) Monitoring Requirements**

(1) Turbidity measurements shall be performed for each public water system on representative samples of the system's filtered water every four hours or more frequently. USAKA may substitute continuous turbidity monitoring for grab-sample monitoring if it regularly validates the continuous measurement for accuracy by using a protocol approved by the Appropriate Agencies. For systems using slow sand filtration or diatomaceous-earth filtration, sampling frequency may be reduced to once per day if USAKA determines, in consultation with the Appropriate Agencies, that it is sufficient for showing effective filtration performance.

(2) In addition to monitoring required by Section 3-3.5.4.2(b)(1), for public water systems utilizing conventional filtration treatment or direct filtration, USAKA shall conduct continuous monitoring of turbidity for each individual filter and shall calibrate turbidimeters using the procedure specified by the manufacturer. USAKA shall record the results of individual filter monitoring every 15 minutes. If there is a failure in the continuous turbidity monitoring equipment, USAKA shall conduct grab sampling every four hours in lieu of continuous monitoring until the turbidimeter is repaired and back on-line. USAKA shall have a maximum of 14 days after failure to repair the equipment. USAKA shall maintain the results of individual filter monitoring for at least three years.

#### **3-3.5.5 Microbiological Contaminants**

##### **3-3.5.5.1 Maximum Contaminant Levels for Microbiological Contaminants**

(a) The MCL is based on the presence or absence of total coliforms in a sample rather than on coliform density. If no more than one sample collected during a month is total-coliform-positive, including repeat samples, the system is in compliance with the MCL for total coliforms. If more than one sample, including repeat samples, is total-coliform-positive, the system is in violation of the MCL. Public notification requirements for a total coliform MCL violation are found in Table 3-3.8.1.

(b) The presence of any fecal-coliform-positive repeat sample or *E. coli*-positive repeat sample, or any total coliform-positive repeat sample after fecal coliforms or *E. coli* are

[3-3.5.5.1(b)]

detected in a sample constitutes a violation of the MCL for total coliforms. Public notification requirements for a fecal coliform/*E. coli* MCL violation are found in Table 3-3.8.1.

- (c) Compliance with the MCL for total coliforms must be determined for each month.

**3-3.5.5.2 Microbiological Monitoring Requirements**

(a) Routine Monitoring

(1) USAKA shall collect total coliform samples according to a written system-sampling plan at sites that are representative of water throughout the distribution system.

(2) At least 10 samples per month shall be taken for each public water system.

(3) USAKA shall collect samples at regular intervals throughout the month.

(4) If a public water system that does not use an approved filtration treatment technique as required by Sections 3-3.5.4.1, USAKA shall collect at least one sample near the first service connection each day that the turbidity exceeds 1 NTU. The sample shall be analyzed for total coliforms. When one or more turbidity measurements in any day exceed 1 NTU, the system shall collect the coliform sample within 24 hours of the first exceedance. Results of sampling from the coliform monitoring shall be considered in determining compliance with the MCL for total coliforms.

(5) Special-purpose samples, such as those taken to determine whether disinfection practices are sufficient after pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for total coliforms. Repeat samples taken in accordance with Section 3-3.5.5.2(b), below, are not considered special-purpose samples and shall be used to determine compliance with the MCL for total coliforms.

(b) Repeat Monitoring

(1) If a routine sample is positive for total coliforms, USAKA must collect a set of repeat samples within 24 hours of being notified of the positive result. No fewer than three repeat samples must be collected for each total-coliform-positive sample found.

(2) At least one repeat sample shall be collected from the sampling tap where the original total-coliform-positive sample was collected, at least one repeat sample shall be collected at a tap within five service connections upstream, and at least one repeat sample shall be collected at a tap within five service connections downstream of the original sampling site. If a total-coliform-positive sample is at the end of the distribution system,

an additional upstream repeat sample shall be collected in lieu of the downstream repeat sample.

(3) All repeat samples shall be collected on the same day.

(4) If one or more repeat samples in the set are positive for total coliforms, an additional set of repeat samples shall be collected in the way specified in Sections 3-3.5.5.2(b)(1) through (3), above. The additional samples shall be collected within 24 hours of notification of the positive result. This process shall be repeated until the system has been found to be total-coliform free.

(5) If after a routine sample is collected and before the results of the analysis of that sample are available, another routine sample(s) is collected from within five adjacent service connections of the initial sample and the analysis of the initial sample reveals the presence of total coliforms, the subsequent sample(s) may be counted as a repeat sample(s) instead of as a routine sample(s).

(6) The results of all routine and repeat samples shall be included in determining compliance with the MCL for total coliforms except for the samples that are invalidated.

(c) Invalidation of total-coliform samples

A total-coliform-positive sample invalidated according to this section does not count toward meeting the minimum monitoring requirements of Sections 3-3.5.5.2(a) and (b) above.

(1) A total-coliform-positive sample may be invalidated only if one or more of the following conditions exist and the decision and the rationale for invalidating a result is documented in writing, and concurred upon by the Appropriate Agencies. A total-coliform-positive sample may not be invalidated solely on the grounds that all repeat samples are total-coliform-negative.

(i) The laboratory performing the analysis establishes that improper analysis of the sample caused the total-coliform-positive result.

(ii) USAKA determines, in consultation with the Appropriate Agencies that, on the basis of the results of repeat samples the total-coliform-positive sample resulted from a plumbing problem in a domestic or nondistribution system.

(iii) USAKA determines, in consultation with the Appropriate Agencies, that there are substantial grounds for believing that a total-coliform-positive result is due to a circumstance or condition that does not reflect water quality in the distribution system. In this case, repeat samples shall still be collected in accordance with Section 3-3.5.5.2(b), and the samples shall be used to determine compliance with the MCL for total coliforms.



[3-3.5.5.2(d)]

(2) A laboratory shall invalidate a total-coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test or if the sample exhibits confluent growth or produces colonies too numerous to count by an analytical method that uses a membrane filter (Membrane Filter Technique). If a laboratory invalidates a sample because of such interference, USAKA shall collect another sample from the same location where the original sample was collected within 24 hours of receipt of notification of the interference problem, and the sample shall be analyzed for the presence of total coliforms. Resampling shall continue until a valid result is obtained.

(d) Fecal coliforms and *Escherichia coli* (*E. coli*) testing:

If a routine or repeat sample is total-coliform-positive, USAKA shall analyze the total-coliform-positive culture medium to determine if fecal coliforms are present, or the system may test for *E. coli* in lieu of fecal coliforms.

(e) Analytical Methodology

(1) The standard sample volume required for analysis for total coliforms is 100 ml, regardless of analytical method.

(2) USAKA needs to determine only the presence or absence of total coliforms; determination of total-coliform density is not required.

(3) USAKA shall analyze for total coliforms in accordance with one of the analytical methods referenced in 40 CFR 141.21 (f)(3)(ii), (iii) or (iv).

(4) USAKA shall conduct analysis for fecal coliforms in accordance with 40 CFR, Part 141.21 (f)(5).

(5) USAKA may conduct analysis for *E. coli* in lieu of fecal coliform in accordance with 40 CFR 141.21(f)(6), (i), (ii), (iii), or (iv).

**3-3.5.6 Radium-226, Radium-228, Uranium, Gross Alpha Particle Radioactivity, Beta Particle Radioactivity and Photon Radioactivity from Man-Made Radionuclides**

**3-3.5.6.1 Maximum Contaminant Levels**

(a) Combined radium-226 and radium-228

The MCL for combined radium-226 and radium-228 is 5 pCi/l

(b) Gross alpha particle activity

The MCL for gross alpha particle activity, including radium-226 but excluding radon and uranium is 15 pCi/l.

(c) Uranium

The MCL for Uranium is 30 µg/l.

(d) Beta Particle and Photon Radioactivity from Man-Made Radionuclides

(1) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent higher than 4 mrem/y to the total body or any internal organ.

(2) Except for the radionuclides listed in Table 3-3.5.6.1 the concentration of man-made radionuclides causing 4 mrem/y total body or organ dose equivalents shall be calculated on the basis of a 2-liter-per-day intake of drinking water, using the 168-hour data listed in *Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure*, NBS Handbook 69, as amended, August 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/y.

<b>TABLE 3-3.5.6.1</b> <b>AVERAGE ANNUAL CONCENTRATIONS ASSUMED TO</b> <b>PRODUCE A TOTAL BODY OR ORGAN DOSE OF</b> <b>4 MILLIREMS PER YEAR</b>		
<b>Radionuclide</b>	<b>Critical Organ</b>	<b>Picocurie per Liter (pCi/l)</b>
tritium	total body	20,000
strontium-90	bone marrow	8
Reference: 40 CFR 141.16		
The standards in this table are subject to the requirements in Section 2-22.		

### 3-3.5.6.2 Analytical Methods and Monitoring Frequency for Radioactivity

(a) The methods specified in 40CFR141.25(a) shall be used to determine compliance with Section 3-3.5.6.1.

(b) For monitoring radioactivity concentrations in drinking water, the required sensitivity of the radio analysis is defined in terms of a detection limit. The detection limit shall be the concentration that can be counted at a precision of plus or minus 100 percent at the 95 percent confidence level (1.96 sigma, where sigma is the standard deviation of the net counting rate of the sample).

(1) For determining compliance with Sections 3-3.5.6.1(a) through (c), the detection limit shall not exceed the concentrations listed in Table 3-3.5.6.2A.

<b>TABLE 3-3.5.6.2A</b> <b>DETECTION LIMITS FOR GROSS ALPHA PARTICLE ACTIVITY,</b> <b>RADIUM 226, RADIUM 228, AND URANIUM</b>	
<b>Radionuclide</b>	<b>Detection Limit</b>
Gross alpha particle activity	3 pCi/l
Radium 226	1 pCi/l
Radium 228	1 pCi/l
Uranium	Reserve
Reference: 40 CFR 141.25	
The standards in this table are subject to the requirements in Section 2-22.	

(2) For determining compliance with Section 3-3.5.6.1(d), the detection limit shall not exceed the concentrations listed in Table 3-3.5.6.2B

(c) For judging compliance with the MCLs listed in Section 3-3.5.6.1 averages of data shall be used and shall be rounded to the same number of significant figures as the MCL for the substance in question.

<b>TABLE 3-3.5.6.2B</b> <b>DETECTION LIMITS FOR MAN-MADE BETA PARTICLE</b> <b>AND PHOTON EMITTERS</b>	
<b>Radionuclide</b>	<b>Detection Limit</b>
Tritium	1,000 pCi/l
Strontium-89	10 pCi/l
Strontium-90	2 pCi/l
Iodine-131	1 pCi/l
Cesium-134	10 pCi/l
Gross beta	4 pCi/l
Other radionuclides	1/10 of the applicable limit
Reference: 40 CFR 141.25	
The standards in this table are subject to the requirements in Section 2-22.	

(d) The monitoring requirements for gross alpha particle activity, radium-226, radium-228, uranium, gross beta particle activity, tritium, and strontium-90 are as follows:

(1) Compliance with initial monitoring requirements shall be based on an analysis of an annual composite of four consecutive quarterly samples or the average of analyses of four samples obtained at quarterly intervals collected at each entry point to the distribution system.

(i) Initial monitoring must be completed before 31 December 2007.

(ii) To satisfy initial monitoring requirements, public water systems may use monitoring data collected after June 1997.

(iii) If the average of the initial monitoring results is above the MCL, USAKA shall notify the Appropriate Agencies and provide public notification in compliance with Section 3-3.8.1 and collect and analyze at least four consecutive quarterly samples until the annual average concentration is reliably and consistently below the MCL.

(2) USAKA can conduct reduced monitoring for gross alpha particle activity, radium-226, radium-228, uranium, gross beta particle activity, tritium, and strontium-90 based upon the following criteria:

(i) If the average of the initial monitoring results for each contaminant is below half the MCL then USAKA shall collect and analyze for gross alpha particle activity, radium-226, radium-228, uranium, gross beta particle activity, tritium, and strontium-90 once every two years.

(ii) For gross alpha particle activity, radium-226, radium-228, uranium, gross beta particle activity, tritium, and strontium-90, if the average of the initial results or the reduced monitoring result for each contaminant is above half the MCL but at or below the MCL, USAKA must collect and analyze at least four consecutive quarterly samples until the results are reliably and consistently below the MCL for that contaminant. USAKA may then return to a reduced monitoring frequency of once every two years. For combined radium-226 and radium-228, the analytical results must be combined.

(iii) If a water system has a monitoring result that exceeds the MCL while on reduced monitoring, USAKA shall notify Appropriate Agencies and provide public notification in compliance with Section 3-3.8.1 and collect and analyze at least four consecutive quarterly samples until the results reliably and consistently no longer exceed the MCL.

(3) A gross alpha particle activity measurement may be substituted for the required radium-226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/L. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/L. The gross alpha measurement shall have a confidence interval of 95 percent (1.65 sigma, where sigma is the standard deviation of the net counting rate of the sample) for radium-226 and uranium.

(4) Compliance with the MCL for gross beta particle activity will be assumed if the results do not exceed the screening level of 50 pCi/L provided that the MCLs for tritium and strontium-90 are not exceeded. Compliance with half the MCL for gross beta

[3-3.5.6.2(e)]

particle activity (trigger level for increased monitoring) will be assumed if the results do not exceed the screening level of 25 pCi/L.

(e) The monitoring requirements for man-made radioactivity in public water systems are as follows:

(1) Compliance for beta emitters, tritium, and strontium-90 shall be based on an analysis of an annual composite of four consecutive quarterly samples or the average of analyses of four samples obtained at quarterly intervals collected at each entry point to the distribution system.

(i) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity has a running annual average less than or equal to 50 pCi/L, the frequency of gross beta particle activity monitoring may be reduced to once every three years.

(ii) Water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Water systems are allowed to subtract the potassium-40 beta particle activity value to determine if the sample exceeds 50 pCi/L. The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

(2) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the screening level, an analysis of the sample must be performed to identify the major radioactive constituents present in the sample and the appropriate doses must be calculated and summed to determine compliance with Section 3-3.5.6.1(d), using the formula in 40CFR 141.66(d)(2). Doses must also be calculated and combined for measured levels of tritium and strontium to determine compliance.

(3) If the MCL in Section 3-3.5.6.1(d) is exceeded, USAKA must begin monitoring at monthly intervals and continue monthly monitoring until such time as the concentration no longer exceeds the MCL as determined by a rolling average of three monthly samples. Frequency of monitoring can then be reduced to quarterly.”

### **3-3.6 TREATMENT AND CONTROL**

#### **3-3.6.1 Use of Non-centralized Treatment Devices**

(a) Bottled water, point-of-use or point-of-entry devices may be used to prevent an unreasonable risk to health. USAKA shall not use bottled water to achieve compliance with an MCL.

(b) USAKA may use point-of-entry or point-of-use devices to comply with an MCL only if all of the following conditions are met:

- (1) USAKA operates and maintains the devices in accordance with the manufacturers recommendations.
- (2) USAKA establishes a monitoring plan before the device is installed.
- (3) The device achieves health protection that is equivalent to the protection provided by centralized water treatment.
- (4) The microbiological safety of the water is maintained.
- (5) These devices must be certified for use by a third party entity such as the National Sanitation Foundation.
- (6) Duration of use of point-of-entry or point-of-use devices shall be specified in a DEP.

### **3-3.6.2 Filtration and Disinfection Treatment Techniques**

Sampling and analyses to determine compliance with these treatment requirements shall be in accordance with the applicable methods given in 40 CFR 141.21, 141.74, and 141.131.

#### **3-3.6.2.1 Treatment Technique Standards**

(a) The standards for filtration and disinfection establish standards for treatment techniques in lieu of MCLs for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count (HPC) bacteria, *Legionella*, *Cryptosporidium* and turbidity. For each public water system USAKA must provide treatment of source water that complies with these treatment-technique standards. The treatment-technique standards consist of installing and properly operating water treatment processes that are documented in a DEP and that reliably meets the following standards.

- (1) At least 99.9 percent (3-log) removal or inactivation of *Giardia lamblia* cysts between a point where the raw water is not subject to recontamination by surface-water runoff and a point downstream before or at the first customer.
- (2) At least 99.99 percent (4-log) removal or inactivation of viruses between a point where raw water is not subject to recontamination by surface-water runoff and a point downstream before or at the first customer.
- (3) At least 99 percent (2-log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before the first customer.

- (4) The profiling and benchmarking requirements of Section 3-6.2.2.
- (b) A public water system is considered in compliance with the requirements of Section 3-3.6.2.1(a) if it meets the disinfection standards in Sections 3-3.6.2.1(c) and 3-3.6.2.2 and the turbidity requirements in Section 3-3.5.4.1. Failure to meet any standard in Section 3-3.6.2(c), Section 3-3.6.2.2, or Section 3-3.5.4.1 is a violation of the treatment technique requirements. Relevant guidance shall be used in evaluating compliance, including the latest version of EPA Surface Water Treatment Rule guidance manual, and TG 199.
- (c) Disinfection for public water systems must meet the following standards:
- (1) The disinfection treatment must be sufficient to ensure that the total treatment processes of that system achieve at least 99.9 percent (3-log) inactivation or removal of *Giardia lamblia* cysts and at least 99.99 percent (4-log) inactivation or removal of viruses.
- (2) The residual disinfectant concentration in the water entering the distribution system cannot be less than 0.2 mg/l for more than 4 hours.
- (3) The concentration of residual disinfectant in the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide cannot be undetectable in more than 5 percent of the samples each month for any two consecutive months. Water in the distribution system having a concentration of heterotrophic bacteria that is less than or equal to 500/ml, measured as HPC is deemed to have a detectable disinfectant residual for determining compliance with this requirement. Thus, the value "V" in the following formula cannot exceed 5 percent in one month for any two consecutive months:

$$V = \frac{c + d + e}{a + b} \times 100$$

where:

- a = number of instances where the residual disinfectant concentration is measured.
- b = number of instances where the residual disinfectant concentration is not measured but HPC is measured.
- c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured.
- d = number of instances where no residual disinfectant concentration is detected and where the HPC is > 500/ml.
- e = number of instances where the residual disinfectant concentration is not measured and HPC is > 500/ml.

(4) Residual disinfectant concentration must be measured in the water entering the distribution system and at locations in the distribution system in accordance with approved methods in 40 CFR 141.131(c).

(i) The residual disinfectant concentration of the water entering the distribution system must be monitored continuously and the lowest value must be recorded each day. If there is a failure of the continuous monitoring equipment, USAKA shall conduct grab sampling every four hours in lieu of continuous monitoring until the equipment is repaired and back on-line. USAKA shall have a maximum of 14 days after failure to repair the equipment.

(ii) The residual disinfectant concentration must be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled as specified in Section 3-3.5.5.2(a). Heterotrophic bacteria, measured as heterotrophic plate count (HPC) and analyzed in accordance with approved methods in 40 CFR 141.174(a)(1) may be used in lieu of residual disinfectant concentration.

### **3-3.6.2.2 Disinfection Profiling and Benchmarking Requirements**

USAKA must conduct a disinfection profile for a public water system if the TTHM annual average  $\geq 0.064$  mg/l or the HAA5 annual average  $\geq 0.048$  mg/l. Relevant guidance, including the USEPA disinfection profiling and benchmarking guidance manual, shall be used to develop the disinfection profile.

(a) USAKA must monitor daily for a period of 12 consecutive calendar months to determine the total logs of inactivation for each day of operation, based on the CT99.9 values contained in the USEPA Surface Water Treatment Rule guidance manual or TG 199. USAKA must begin this monitoring not later than March 16, 2000. As a minimum, a public water system with a single point of disinfectant application prior to entrance to the distribution system must conduct the following monitoring:

(1) The temperature of the disinfected water must be measured once per day at each residual disinfectant concentration sampling point during peak hourly flow.

(2) The pH of the disinfected water must be measured once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.

(3) The disinfectant concentration X contact time (CT) must be determined before or at the first customer each day during peak hourly flow.

(b) In place of the monitoring required in Section 3-3.6.2.2(a), a disinfection profile may be submitted using three years of existing operational data that is representative of *Giardia lamblia* inactivation (daily CT calculations) through the entire plant provided the use of this data is approved by the Appropriate Agencies listed in UES Section 2-6. The Appropriate Agencies must approve the use of this data and the associated profile by March 16, 2000.



[3-3.6.2.2(d)]

(c) In addition to the disinfection profile generated under Section 3-3.6.2.2(a) existing operational data may also be used to develop the disinfection profile for additional years. The data must be representative of inactivation throughout the entire water plant (daily CT calculations) and must be approved by the Appropriate Agencies.

(d) Calculate the total inactivation ratio as follows:

(1) Determine the inactivation ratio (CT calculated/CT99.9) before or at the first customer during peak hourly flow. Relevant guidance shall be used in evaluating CT, including the EPA Surface Water Treatment Rule guidance manual, and TG 199.

(2) Determine the total logs of inactivation by multiplying the inactivation ratio (above) by 3.0.

(e) Maintain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the Appropriate Agencies.

(f) For each year of profiling data collected and calculated according to Sections 3-3.6.2.2(a)-(d), USAKA must calculate the lowest average monthly *Giardia lamblia* inactivation. This is done by dividing the sum of daily *Giardia lamblia* inactivations by the number of values calculated for that month. The disinfection benchmark is the lowest monthly average value (for systems with one year of profiling data) or average of lowest monthly average values (for systems with more than one year of profiling data) of the monthly logs of *Giardia lamblia* inactivation in each year of profiling data.

(g) USAKA must consult with the Appropriate Agencies if USAKA decides to make a significant change to the disinfection practice of a water system. Significant changes to disinfection practice include changes to the point of disinfection, changes to the disinfectant used in the treatment plant, changes to the disinfection process, and any other modification identified by the Appropriate Agencies.

### **3-3.6.3 Treatment Technique for Control of Disinfection Byproduct Precursors**

(a) The requirements in this section become effective 1 January 2002. Total Organic Carbon (TOC) levels shall be measured in accordance with the methods listed in 40 CFR 141.131.

(b) Public water systems employing conventional filtration treatment must operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels shown in Table 3-3.6.2.3 unless the system meets at least one of the following alternative compliance criteria:

- (1) The system's source water TOC level is less than 2.0 mg/l, calculated quarterly as a running annual average.
- (2) The system's treated water TOC level is less than 2.0 mg/l, calculated quarterly as a running annual average.
- (3) The system's source water TOC level is less than 4.0 mg/l, calculated quarterly as a running annual average; the source water alkalinity is greater than 60 mg/l (as CaCO<sub>3</sub>), calculated quarterly as a running annual average; and the TTHM and HAA5 running annual averages are no greater than 0.040 mg/l and 0.030 mg/l, respectively.
- (4) The TTHM and HAA5 running annual averages are no greater than 0.040 mg/l and 0.030 mg/l, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.
- (5) The system's source water specific ultraviolet absorption (SUVA), prior to any treatment and measured monthly is less than or equal to 2.0 l/mg-m, calculated quarterly as a running annual average.
- (6) The system's finished water SUVA is less than or equal to 2.0 l/mg-m, calculated quarterly as a running annual average.

<b>Table 3-3.6.2.3</b>			
<b>Required TOC Percent Removal Requirements</b>			
<b>Source Water TOC (mg/l)</b>	<b>% TOC Removal</b>		
	<b>Source Water Alkalinity (mg/l as CaCO<sub>3</sub>)</b>		
	<b>0-60 mg/l</b>	<b>&gt; 60-120 mg/l</b>	<b>&gt;120 mg/l</b>
2.0-4.0 mg/l .....	35.0%	25.0%	15.0%
> 4.0-8.0 mg/l .....	45.0%	35.0%	25.0%
> 8.0 mg/l .....	50.0%	40.0%	30.0%
Source: 40CFR141.135(b)			

### **3-3.6.4 Identification of Best Technology, Treatment Techniques, or Other Methods Generally Available for Organic and Inorganic Chemicals, and Radionuclides**

The best technology, treatment techniques, or other methods generally available for achieving compliance with the MCLs for synthetic organic and inorganic chemicals include those listed in the following two tables.

#### **3-3.6.4.1 Organic Chemicals**

Best available control technologies for organic chemicals are given in Table 3-3.6.4.1.

<b>TABLE 3-3.6.4.1</b> <b>BEST AVAILABLE TECHNOLOGY FOR ORGANIC CHEMICALS</b>			
<b>CHEMICAL</b>	<b>PACKED-TOWER AERATION</b>	<b>GRANULAR ACTIVATED CARBON</b>	<b>OXIDATION</b>
alachlor		X	
aldicarb		X	
aldicarb sulfone		X	
aldicarb sulfoxide		X	
atrazine		X	
benzene	X	X	
beno[a]pyrene		X	
carofuran		X	
carbon tetrachloride	X	X	
chlordane		X	
dalapon		X	
2,4-D		X	
di(2-ethylhexyl)adipate	X	X	
di(2-ethylhexyl)phthalate		X	
dibromochloropropane (DBCP)	X	X	
o-dichlorobenzene	X	X	
para-dichlorobenzene	X	X	
1,2-dichloroethane	X	X	
1,1-dichloroethylene	X	X	
cis-1,2-dichloroethylene	X	X	
trans-1,2-Dichloroethylene	X	X	
dichloromethane	X		
1,2-dichloropropane	X	X	
dinoseb		X	
diquat		X	
endothall		X	
endrin		X	
ethylbenzene	X	X	
ethylene dibromide (EDB)	X	X	
glyphosate			X
heptachlor		X	
heptachlor epoxide		X	
hexachlorobenzene		X	
hexachlorocyclopentadiene	X	X	
lindane		X	
methoxychlor		X	
monochlorobenzene	X	X	
oxamyl(vydate)		X	
pentachlorophenol		X	
picloram		X	
polychlorinated biphenyls (PCB)		X	
simazine		X	

<b>TABLE 3-3.6.4.1</b> <b>BEST AVAILABLE TECHNOLOGY FOR ORGANIC CHEMICALS</b>			
<b>CHEMICAL</b>	<b>PACKED-TOWER AERATION</b>	<b>GRANULAR ACTIVATED CARBON</b>	<b>OXIDATION</b>
styrene	X	X	
2,3,7,8-TCDD (dioxin)		X	
tetrachloroethylene	X	X	
toluene	X	X	
toxaphene		X	
2,4,5-TP (Slivex)		X	
1,2,4-trichlorobenzene	X	X	
1,1,1-trichloroethane	X	X	
1,1,2-trichloroethane	X	X	
trichloroethylene	X	X	
vinyl chloride	X		
xylene	X	X	
Reference: 40 CFR 141.61(b)			
The standards in this table are subject to the requirements in Section 2-22.			

### 3-3.6.4.2 Inorganic Chemicals

Best available control technologies for inorganic chemicals are given in Table 3-3.6.4.2.

<b>TABLE 3-3.6.4.2</b> <b>BEST AVAILABLE TECHNOLOGY FOR INORGANIC CHEMICALS</b>	
<b>Chemical</b>	<b>Best Available Technology (BAT)</b>
antimony	2, 7
arsenic <sup>4</sup>	1, 2, 5, 6, 7, 9, 12 <sup>5</sup>
asbestos	2, 3, 8
barium	5, 6, 7, 9
beryllium	1, 2, 5, 6, 7
cadmium	2, 5, 6, 7
chromium	2, 5, 6 <sup>2</sup> , 7
cyanide	5, 7, 10
mercury	2 <sup>1</sup> , 4, 6 <sup>1</sup> , 7 <sup>1</sup>
nickel	5, 6, 7
nitrate	5, 7, 9
nitrite	5, 7
selenium	1, 2 <sup>3</sup> , 6, 7, 9
thallium	1, 5

- <sup>1</sup> BAT only if influent Hg concentrations  $\leq 10$  micrograms/l.
- <sup>2</sup> BAT only for chromium III
- <sup>3</sup> BAT for Selenium IV only.
- <sup>4</sup> BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.
- <sup>5</sup> To obtain high removals, iron to arsenic ratio must be at least 20:1

Key to BATs in Table:

- 1 = activated alumina  
 2 = coagulation/filtration  
 3 = direct and diatomite filtration  
 4 = granular activated carbon  
 5 = ion exchange  
 6 = lime softening  
 7 = reverse osmosis  
 8 = corrosion control  
 9 = electrodialysis  
 10 = chlorine  
 11 = ultraviolet  
 12 = oxidation/filtration

Reference: 40 CFR 141.62(b)

The Standards in this table are subject to the requirements in Section 2-22.

### 3-3.6.4.3 Disinfection Byproducts

The best technology, treatment technique, or other methods generally available for achieving compliance with the MCLs for disinfection byproducts are shown in Table 3-3.6.4.3.

<b>TABLE 3-3.6.4.3</b> <b>BEST TECHNOLOGY, TREATMENT TECHNIQUES, OR</b> <b>OTHER METHODS GENERALLY AVAILABLE FOR</b> <b>DISINFECTION BYPRODUCTS</b>	
<b>Disinfection Byproduct</b>	<b>Best Available Technology</b>
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant

#### 3-3.6.4.4 Fluoride

The best technology, treatment technique, or other methods generally available for achieving compliance with the MCL for fluoride include the following:

- (a) Activated alumina absorption, centrally applied.
- (b) Reverse osmosis, centrally applied.

#### 3-3.6.4.5 Radionuclides

The best technology, treatment technique, or other methods generally available for achieving compliance with radionuclide MCLs include the following:

<b>TABLE 3-3.6.4.5</b> <b>BEST AVAILABLE TECHNOLOGY FOR RADIONUCLIDES</b>	
<b>Chemical</b>	<b>Best Available Technology (BAT)</b>
Combined radium-226 and radium-228	1, 2, 3
Uranium	1, 2, 3, 4
Gross alpha particle activity (excluding Radon and Uranium)	2
Beta particle and photon radioactivity	1, 2
Key to BATs in Table: 1 = ion exchange 2 = reverse osmosis 3 = lime softening 4 = coagulation/filtration  Reference: 40 CFR 141.66(g) The Standards in this table are subject to the requirements in Section 2-22.	

### 3-3.7 MAXIMUM CONTAMINANT LEVEL GOALS AND DESIRABLE CONTAMINANT LEVELS

Maximum contaminant level goals represent contaminant levels below which no adverse health effects are anticipated or known to exist. Although they are not enforceable standards, all public water systems should strive to achieve them whenever possible and feasible.

Maximum desirable contaminant levels represent levels that are desirable for aesthetic and public acceptance purposes. Although they are not enforceable standards, all public water systems should strive to achieve them whenever possible and feasible.

### 3-3.7.1 Maximum Contaminant Level Goals for Organic Contaminants

Maximum contaminant level goals (MCLGs) are shown in Table 3-3.7.1.

<b>TABLE 3-3.7.1</b> <b>MAXIMUM CONTAMINANT LEVEL GOALS FOR</b> <b>ORGANIC CONTAMINANTS</b>	
<b>Contaminant</b>	<b>Maximum Contaminant Level Goal (MCLG) (milligrams per liter)</b>
1,2 Dichloropropane	zero
Epichlorohydrin	zero
Pentachlorophenol	zero
Benezo[a]pyrene	zero
Dichloromethane (methylene chloride)	zero
di(2-ethylhexyl)phthalate	zero
Hexachlorobenzene	zero
2,3,7,8-TCDD (Dioxin)	zero
Acrylamide	zero
Benzene	zero
Vinyl Chloride	zero
Carbon Tetrachloride	zero
1,2 Dichloroethane	zero
Trichloroethylene	zero
Alachlor	zero
Dibromochloropropane	zero
Ethylene dibromide	zero
Heptachlor	zero
Heptachlor epoxide	zero
Polychlorinated biphenyls (PCBs)	zero
Chlordane	zero
Tetachloroethylene	zero
Toxaphene	zero
1,1-Dichlorethylene	0.007
1,1,1-Trichloroethane	0.20
para-Dichlorobenzene	0.075
cis-1,2-Dichloroethylene	0.07
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
Styrene	0.1
Toluene	1
trans-1,2-Dichloroethylene	0.1

**TABLE 3-3.7.1  
MAXIMUM CONTAMINANT LEVEL GOALS FOR  
ORGANIC CONTAMINANTS**

<b>Contaminant</b>	<b>Maximum Contaminant Level Goal (MCLG) (milligrams per liter)</b>
Xylenes (total)	10
Atrazine	0.003
Carbofuran	0.04
2,4 -D	0.07
Lindane	0.0002
Methoxychlor	0.04
2,4,5-TP	0.05
Aldicarb	0.001
Adicarb sulfoxide	0.001
Aldicarb sulfone	0.001
Dalapon	0.2
Di(2-ethylhexyl)adipate	0.4
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Glyphosate	0.7
Hexachlorocyclopentadiene	0.05
Oxamyl (Vydate)	0.2
Picloram	0.5
Simazine	0.004
1,2,4-Trichlorobenzene	0.07
1,1,2-Trichloroethane	0.003
Reference: 40 CFR 141, Subpart F	
The standards in this table are subject to the requirements in Section 2-22.	



### 3-3.7.2 Maximum Contaminant Level Goals for Microbiological Contaminants

MCLGs for microbiological contaminants are shown in Table 3-3.7.2

<b>TABLE 3-3.7.2</b> <b>MAXIMUM CONTAMINANT LEVEL GOALS</b> <b>FOR MICROBIOLOGICAL CONTAMINANTS</b>	
<b>Contaminant</b>	<b>Maximum Contaminant Level Goal (MCLG)</b>
(1) <i>Giardia lamblia</i>	zero
(2) Viruses	zero
(3) <i>Legionella</i>	zero
(4) Total coliforms (including fecal coliforms and <i>E. coli</i> )	zero
(5) <i>Cryptosporidium</i>	zero
Reference: 40 CFR 141.52	
The standards in this table are subject to the requirements in Section 2-22.	

### 3-3.7.3 Maximum Desirable Contaminant Levels Affecting Drinking Water Aesthetics

(a) This section establishes desirable levels for contaminants that primarily affect the aesthetic qualities influencing public acceptance of drinking water. At considerably higher concentrations of these contaminants, health implications also may exist.

(b) The recommended MDCLs for public water systems are listed in Table 3-3.7.3.

<b>TABLE 3-3.7.3</b> <b>MAXIMUM DESIRABLE CONTAMINANT LEVELS</b> <b>FOR DRINKING WATER AESTHETICS</b>	
<b>Contaminant</b>	<b>Maximum Desirable Contaminant Level (MDCL) (milligrams per liter)</b>
Aluminum	0.05-0.2
Chloride	250
Color	15 color units
Copper	1.0
Corrosivity	Noncorrosive
Fluoride	2.0
Foaming agents	0.5
Iron	0.3
Manganese	0.05
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.1
Sulfate	250
Total Dissolved Solids (TDS)	500
Zinc	5
Reference: 40 CFR 143.3.	

(c) Monitoring for Maximum Desirable Contaminant Levels

(1) Monitoring for MDCL parameters given in Section 3-3.7.3(b) above is recommended no less frequently than the frequency of monitoring performed for the inorganic chemical contaminants listed in Section 3-3.5.1.2(b)(2). Monitoring more frequently may be appropriate for specific parameters, such as pH, color, and odor.

(2) Analyses for MDCL parameters should be performed according to the methods listed under 40 CFR 143.4(b).

### 3-3.7.4 Maximum Contaminant Level Goals for Disinfection Byproducts

MCLGs for disinfection byproducts are shown in Table 3-3.7.4

<b>TABLE 3-3.7.4</b> <b>MAXIMUM CONTAMINANT LEVEL GOALS FOR</b> <b>DISINFECTION BYPRODUCTS</b>	
<b>Contaminant</b>	<b>Maximum Contaminant Level Goal (MCLG) (milligrams per liter)</b>
Chloroform	zero after 1 Jan 02
Bromodichloromethane	zero after 1 Jan 02
Bromoform	zero after 1 Jan 02
Bromate	zero after 1 Jan 02
Dichloroacetic acid	zero after 1 Jan 02
Trichloroacetic acid	0.3 after 1 Jan 02
Chlorite	0.8 after 1 Jan 02
Dibromochloromethane	0.06 after 1 Jan 02
Reference: 40 CFR 141, Subpart F.	
The standards in this table are subject to the requirements in Section 2-22.	

## 3-3.8 PUBLIC NOTIFICATION AND INFORMATION

### 3-3.8.1 Public Notifications

Public notification (Section 2-7.3) is required for violations of drinking water standards which include exceedances of MCLs, and non-compliance with treatment techniques and monitoring requirements. Notwithstanding the notification requirements of this section, any situation that poses an imminent and substantial risk to public health is subject to the emergency notification provisions of Section 2-7.3.1. All Tier 1 violations require emergency notifications as well as any other situation, such as breakdowns in water treatment facilities, that represent an immediate threat to public health.

- (a) USAKA shall furnish a copy of the most recent public notice on violation of drinking water standards to all new hookups before or at the time service begins.
- (b) Public notice requirements are divided into three tiers. The following provides the definition for each tier:

Tier 1: Required for water system violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.

Tier 2: Required for all other water systems violations and situations with potential to have serious adverse effects on human health.

Tier 3: Required for all other water system violations and situations not included in Tiers 1 and Tier 2.

(1) Table 3-3.8.1 identifies the tier assignment for each specific violation or situation.

(2) Tier 1 violations and situations require a public notice as soon as practical but no later than 24 hours after USAKA learns of the violation. Tier 1 violations require emergency notification (Section 2-7.3.1)

(i) Tier 1 public notices must be provided to all persons served by the water system.

(ii) Tier 1 public notices must reach all persons served, using one or more of the following forms of delivery:

(A) Appropriate broadcast media (such as radio and television);

(B) Posting of the notice in conspicuous locations throughout the area served by the water system; or

(C) Hand delivery of the notice to persons served by the water system.

(3) Tier 2 violations and situations require a public notice as soon as practical, but no later than 30 days after USAKA learns of the violation. If the public notice is posted, the notice must remain in place for as long as the violation or situation persists, but in no case for less than seven days, even if the violation or situation is resolved.

(i) Tier 2 public notices must be repeated every three months as long as the violation or situation persists.

(ii) Initial and repeat Tier 2 public notices must reach all persons served using one or more of the following forms of delivery:

(A) Mail or other direct delivery to all persons served by the water system;  
and

(B) Publication in *The Kwajalein Hourglass*, posting in public places served by the system, announcement in appropriate broadcast media, or delivery to community organizations.

(4) Tier 3 violations and situations require a public notice not later than one year after USAKA learns of the violation or situation or begins operating under an exception.

**[3-3.8.1(b)]**

Following the initial notice, USAKA must repeat the notice annually for as long as the violation, exception, or other situation persists.

(i) Initial and repeat Tier 3 public notices must reach all persons served using one or more of the following forms of delivery:

(A) Mail or other direct delivery to all persons served by the water system;

(B) Publication in the *The Kwajalein Hourglass*, posting in public places served by the system or appropriate broadcast media, or delivery to community organizations;

(C) Included in the annual consumer confidence report (CCR).

(5) Tier 1, Tier 2, and Tier 3 public notices must conform to the requirements of Section 2-7.7.3 and contain the following information:

(i) A description of the violation or situation, including the contaminant(s) of concern, and (as applicable) the contaminate level(s).

(ii) When the violation occurred

(iii) Any potential adverse health effects associated with the violation. USAKA shall consult 40CFR141.205(d)(1) for appropriate health effects language.

(iv) The population at risk, including sub-populations that may be particularly vulnerable to any adverse health effects associated with the violation.

(v) Whether alternative sources of drinking water should be used.

(vi) What actions, if any, consumers should take.

(vii) What USAKA is doing to correct the violation or situation

(viii) When the system is expected to be compliant

(c) Requirements for Public Notices and Public Education Regarding Lead:

(1) For public water systems exceeding the lead action level, based on tap water samples collected in accordance with Section 3-3.5.1.2(b)(4), USAKA shall provide notification and public education materials to all consumers.

(2) For public water systems affected by lead contamination, even if there is no exceedance of the lead action level, USAKA shall provide public education materials to all new consumers before or when service begins.

(3) Public notification and education materials required under paragraph 1 and 2 above shall include, but not be limited to, an introduction discussing lead in drinking water concerns, information on the health effects of lead, information on sources of lead in drinking water supplies, consumer actions to reduce lead exposure from drinking water, and sources for further information and supplemental monitoring.

(d) When the TTHM MCL is exceeded, notification must be made in three consecutive publications of *The Kwajalein Hourglass*.

**TABLE 3-3.8.1  
VIOLATIONS OF DRINKING WATER REGULATIONS  
REQUIRING PUBLIC NOTICE**

CONTAMINANT	MCL/MRDL/TT VIOLATIONS <sup>1</sup>		MONITORING & TESTING PROCEDURE VIOLATIONS	
	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION
I. Violations of Drinking Water Regulations				
A. Microbiological Contaminants				
1. Total coliform	2	3-3.5.5.1	2	3-3.5.5.2
2. Fecal coliform/ <i>E. coli</i>	1	3-3.5.5.1	<sup>2</sup> 1, 2	3-3.5.5.2
3. Turbidity (for TT violations, resulting from a single exceedance of maximum allowable turbidity level)	1	3-3.5.4.1	2	3-3.5.4.2
4. Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. allowable turbidity level (TT).	2	3-3.6.2.1	2	3-3.5.4.2
5. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT)	2	3-3.6.2.1	2	3-3.5.4.2
6. Filter Backwash Recycling Rule Violations	2	3-3.5.4.1(f)(1)	3	3-3.5.4.1(f)(2)
B. Inorganic Chemicals (IOCs)				
1. Antimony	2	3-3.5.1.1	3	3-3.5.1.2
2. Arsenic	2	3-3.5.1.1	3	3-3.5.1.2
3. Asbestos (fibers >10µm)	2	3-3.5.1.1	3	3-3.5.1.2
4. Barium	2	3-3.5.1.1	3	3-3.5.1.2
5. Beryllium	2	3-3.5.1.1	3	3-3.5.1.2
6. Cadmium	2	3-3.5.1.1	3	3-3.5.1.2
7. Chromium (total)	2	3-3.5.1.1	3	3-3.5.1.2
8. Cyanide	2	3-3.5.1.1	3	3-3.5.1.2
9. Fluoride	2	3-3.5.1.1	3	3-3.5.1.2
10. Mercury (inorganic)	2	3-3.5.1.1	3	3-3.5.1.2
11. Nitrate	1	3-3.5.1.1	<sup>3</sup> 1, 3	3-3.5.1.2
12. Nitrite	1	3-3.5.1.1	<sup>3</sup> 1, 3	3-3.5.1.2
13. Total Nitrate and Nitrite	1	3-3.5.1.1	3	3-3.5.1.2
14. Selenium	2	3-3.5.1.1	3	3-3.5.1.2
15. Thallium	2	3-3.5.1.1	3	3-3.5.1.2
C. Lead and Copper Rule (Action Level for lead is 0.015 mg/L, for copper is 1.3 mg/L)				

**TABLE 3-3.8.1  
VIOLATIONS OF DRINKING WATER REGULATIONS  
REQUIRING PUBLIC NOTICE**

CONTAMINANT	MCL/MRDL/TT VIOLATIONS <sup>1</sup>		MONITORING & TESTING PROCEDURE VIOLATIONS	
	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION
1. Lead and Copper Rule (TT)	2	3-3.5.1.1	3	3-3.5.1.2
D. Synthetic Organic Chemicals (SOCs)				
1. 2,4-D	2	3-3.5.2.1	3	3-3.5.2.2
2. 2,4,5-TP (Silvex)	2	3-3.5.2.1	3	3-3.5.2.2
3. Alachlor	2	3-3.5.2.1	3	3-3.5.2.2
4. Atrazine	2	3-3.5.2.1	3	3-3.5.2.2
5. Benzo(a)pyrene (PAHs)	2	3-3.5.2.1	3	3-3.5.2.2
6. Carbofuran	2	3-3.5.2.1	3	3-3.5.2.2
7. Chlordane	2	3-3.5.2.1	3	3-3.5.2.2
8. Dalapon	2	3-3.5.2.1	3	3-3.5.2.2
9. Di (2-ethylhexyl) adipate	2	3-3.5.2.1	3	3-3.5.2.2
10. Di (2-ethylhexyl) phthalate	2	3-3.5.2.1	3	3-3.5.2.2
11. Dibromochloropropane	2	3-3.5.2.1	3	3-3.5.2.2
12. Dinoseb	2	3-3.5.2.1	3	3-3.5.2.2
13. Dioxin (2,3,7,8-TCDD)	2	3-3.5.2.1	3	3-3.5.2.2
14. Diquat	2	3-3.5.2.1	3	3-3.5.2.2
15. Endothall	2	3-3.5.2.1	3	3-3.5.2.2
16. Endrin	2	3-3.5.2.1	3	3-3.5.2.2
17. Ethylene dibromide	2	3-3.5.2.1	3	3-3.5.2.2
18. Glyphosate	2	3-3.5.2.1	3	3-3.5.2.2
19. Heptachlor	2	3-3.5.2.1	3	3-3.5.2.2
20. Heptachlor epoxide	2	3-3.5.2.1	3	3-3.5.2.2
21. Hexachlorobenzene	2	3-3.5.2.1	3	3-3.5.2.2
22. Hexachlorocyclopentadiene	2	3-3.5.2.1	3	3-3.5.2.2
23. Lindane	2	3-3.5.2.1	3	3-3.5.2.2
24. Methoxychlor	2	3-3.5.2.1	3	3-3.5.2.2
25. Oxamyl (Vydate)	2	3-3.5.2.1	3	3-3.5.2.2
26. Pentachlorophenol	2	3-3.5.2.1	3	3-3.5.2.2
27. Picloram	2	3-3.5.2.1	3	3-3.5.2.2
28. Polychlorinated biphenyls (PCBs)	2	3-3.5.2.1	3	3-3.5.2.2
29. Simazine	2	3-3.5.2.1	3	3-3.5.2.2
30. Toxaphene	2	3-3.5.2.1	3	3-3.5.2.2
E. Volatile Organic Chemicals (VOCs)				
1. Benzene	2	3-3.5.2.1	3	3-3.5.2.2
2. Carbon tetrachloride	2	3-3.5.2.1	3	3-3.5.2.2
3. Chlorobenzene (monochlorobenzene)	2	3-3.5.2.1	3	3-3.5.2.2
4. o-Dichlorobenzene	2	3-3.5.2.1	3	3-3.5.2.2



**TABLE 3-3.8.1  
VIOLATIONS OF DRINKING WATER REGULATIONS  
REQUIRING PUBLIC NOTICE**

CONTAMINANT	MCL/MRDL/TT VIOLATIONS <sup>1</sup>		MONITORING & TESTING PROCEDURE VIOLATIONS	
	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION
5. p-Dichlorobenzene	2	3-3.5.2.1	3	3-3.5.2.2
6. 1,2-Dichloroethane	2	3-3.5.2.1	3	3-3.5.2.2
7. 1,1-Dichloroethylene	2	3-3.5.2.1	3	3-3.5.2.2
8. cis-1,2-Dichloroethylene	2	3-3.5.2.1	3	3-3.5.2.2
9. trans-1,2-Dichloroethylene	2	3-3.5.2.1	3	3-3.5.2.2
10. Dichloromethane	2	3-3.5.2.1	3	3-3.5.2.2
11. 1,2-Dichloropropane	2	3-3.5.2.1	3	3-3.5.2.2
12. Ethylbenzene	2	3-3.5.2.1	3	3-3.5.2.2
13. Styrene	2	3-3.5.2.1	3	3-3.5.2.2
14. Tetrachloroethylene	2	3-3.5.2.1	3	3-3.5.2.2
15. Toluene	2	3-3.5.2.1	3	3-3.5.2.2
16. 1,2,4-Trichlorobenzene	2	3-3.5.2.1	3	3-3.5.2.2
17. 1,1,1-Trichloroethane	2	3-3.5.2.1	3	3-3.5.2.2
18. 1,1,2-Trichloroethane	2	3-3.5.2.1	3	3-3.5.2.2
19. Trichloroethylene	2	3-3.5.2.1	3	3-3.5.2.2
20. Vinyl chloride	2	3-3.5.2.1	3	3-3.5.2.2
21. Xylenes (total)	2	3-3.5.2.1	3	3-3.5.2.2
F. Radioactive Contaminants				
1. Beta/photon emitters	2	3-3.5.6.1	3	3-3.5.6.2
2. Alpha emitters	2	3-3.5.6.1	3	3-3.5.6.2
3. Combined radium (226 & 228)	2	3-3.5.6.1	3	3-3.5.6.2
4. Uranium	2	3-3.5.6.1	3	3-3.5.6.2
G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals. Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).				
1. Total trihalomethanes (TTHMs)	2	3-3.5.3.1	3	3-3.5.3.2
2. Haloacetic Acids (HAA5)	2	3-3.5.3.1	3	3-3.5.3.2
3. Chlorine (MRDL)	2	3-3.5.3.1	3	3-3.5.3.2
4. Chlorine Dioxide (MRDL) Acute	1	3-3.5.3.1	3	3-3.5.3.2

<b>TABLE 3-3.8.1 VIOLATIONS OF DRINKING WATER REGULATIONS REQUIRING PUBLIC NOTICE</b>				
CONTAMINANT	MCL/MRDL/TT VIOLATIONS <sup>1</sup>		MONITORING & TESTING PROCEDURE VIOLATIONS	
	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION	TIER OF PUBLIC NOTICE REQUIRED	UES CITATION
Non-acute	2			
5. Chloramines (MRDL)	2	3-3.5.3.1	3	3-3.5.3.2
6. Chorite (MCL)	2	3-3.5.3.1	3	3-3.5.3.2
7. Bromate (MCL)	2	3-3.5.3.1	3	3-3.5.3.2
8. Control of DBP precursors- - TOC (TT)	2	3-3.6.2.3	3	3-3.5.3.3
9. Bench marking and disinfection profiling.	N/A	N/A	3	3-3.6.2.2
H. Other Treatment Techniques				
1. Acrylamide (TT)	2	3-3.5.2.1	N/A	N/A
2. Epichlorohydrin (TT)	2	3-3.5.2.1	N/A	N/A
II. Other Situations Requiring Public Notification:				

#### Appendix A--Endnotes

1. MCL--Maximum contaminant level, MRDL--Maximum residual disinfectant level, TT--Treatment technique

2. Failure to test for fecal coliform or *E. coli* is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 2.

3. Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.

### 3-3.8.2 Consumer Confidence Reports

(a) USAKA shall provide to consumers of water from public water systems at USAKA an annual report that contains the information specified in this section.

(b) The first Consumer Confidence Report shall be delivered by October 1999. Subsequent reports shall be delivered by July 1 every year thereafter for the previous year.

(c) Each annual report shall contain the following:

- (1) Information on the source of the water delivered.
- (2) Definitions related to drinking water.
- (3) Information on contaminants including a listing of monitoring performed.

[3-3.8.2(c)]

(4) Information including date and results for detected contaminants for the year covered by the report. When the monitoring frequency for a contaminant is less often than once a year, the date and results of the most recent sampling must be included. No data older than five years need be included.

(5) Information on detected contaminants not subject to routine monitoring.

(6) Information on *Cryptosporidium*, radon, and other contaminants only if USAKA has monitored for these contaminants.

(7) Non-compliance with the Standards associated with monitoring and reporting, filtration and disinfection, treatment techniques, and record keeping.

(8) Brief explanation of contaminants which may reasonably be expected to be found in drinking water.

(9) Telephone numbers of applicable water system points of contact.

(10) Information about opportunities for public participation in decisions that may affect the quality of the water.

(11) Additional health information for immuno-compromised individuals based on analytical data of arsenic, nitrate/nitrite, lead and TTHMs. (40 CFR 141.154)

(d) Suitable templates and guidelines provided by the USEPA and DOD may be used to develop annual reports.

(e) The report shall be written in Marshallese and English.

(f) USAKA shall ensure that copies of the report are reasonably available to all consumers.

### **3-3.9 PROHIBITIONS**

#### **3-3.9.1 Prohibition on Use of Lead Pipes, Solder, and Flux**

(a) In general:

(1) Prohibition: Any pipe, solder, or flux that is used in installing or repairing.

(i) Any public water system, or

(ii) All plumbing in a residential or nonresidential facility that supplies water for human consumption and that is connected to a public water system shall be lead-free as defined below in Section 3-3.9.1(b). The standards established here shall not apply to leaded joints that are necessary for repairing cast-iron pipes.

(b) Definition of “lead-free.” For this section, the term “lead-free” means:

(1) When used for solders and flux, refers to solders and flux containing not more than 0.2 percent lead.

(2) When used for pipes and pipe fittings, refers to pipes and pipe fittings containing not more than 8.0 percent lead.

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## **3-4 ENDANGERED SPECIES AND WILDLIFE RESOURCES**

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- 3-4.9 SPECIAL REQUIREMENTS**

### **3-4.1 INTRODUCTION**

This section establishes standards for the conservation of species and habitats of special concern at USAKA, including threatened and endangered species. The objective is to ensure that actions taken at USAKA will not jeopardize the continued existence of these species or result in destroying or adversely changing the habitats on which they depend. The protection of species at USAKA is accomplished using two types of performance standards: formal consultation and coordination. For endangered and threatened species and for marine mammals and their habitats (Appendices 3-4A through 3-4E), the formal consultation procedures of a DEP (Sections 2-17.3 and 3-4.5) apply. For other wildlife species and their habitats (Appendices 3-4F and 3-4G), the coordination procedures (Section 3-4.6) apply, and a DEP is required when the intentional taking of a migratory bird is involved or when the USFWS or USNMFS, USAKA and the RMIEPA agree that the wildlife habitats listed in Appendix 3-4H may be significantly affected by a proposed activity. In addition to the specific procedural references in this section, the standards for endangered species and wildlife resources shall incorporate all applicable procedures that are in Part 2. The environmental baseline data and the species and habitat listings in Appendices 3-4A through 3-4H will be updated (Section 3-4.9.2), and all applicable public notices shall be issued [Section 2-7.3.2(d)].

### **3-4.2 DERIVATION**

Section 3-4 of the Standards is derived primarily from 50 CFR 17, 23, 402, 424, and 450-452. Those parts of 50 CFR establish regulations implementing provisions of the Endangered Species Act (ESA), as amended, and other regulations applicable to wildlife resources having substantial regional significance. The coordination procedures for other fish and wildlife resources are derived from the Fish and Wildlife Coordination Act (FWCA). Other U.S. statutes embodied in these Standards are the Migratory Bird Conservation Act (MBCA) and the Marine Mammal Protection Act (MMPA). In addition to U.S. laws and regulations, wildlife-protection statutes from the RMI were used to obtain a list of native species about which consultation will be required if they are affected by actions of USAKA. The consultation procedures for endangered species and their habitats are derived from 50 CFR 401.01 through 402.16 but have been streamlined to simplify the consultation process because consultation may be conducted on various species, including RMI-protected species.

### **3-4.3 SUMMARY OF CHANGES**

The standards for endangered species and wildlife resources deviate from 50 CFR 10, 17, 18, 21, 23, 216, 217-225, 402, 424, and 450-452 in that they focus only on the provisions applicable to the USAKA environment and eliminate the provisions that address certain exemptions, state cooperative agreements, permits for economic hardship, special rules for threatened wildlife, listing and designation of critical habitats, experimental populations, certain regulations of Convention on International Trade in Endangered Species (CITES), and issues that are specific to individual species. In addition, the standards deviate from the coordination procedures established in the FWCA by streamlining coordination among Appropriate Agencies

to allow expeditious review of a project's effect on fish and wildlife resources of local or regional significance at USAKA. Within this context, the standards for endangered species and wildlife resources establish requirements that incorporate species protected under RMI laws; include consultation and coordination procedures for evaluating effects on fish, wildlife, and plants to ensure that USAKA activities do not contribute to species being placed in threatened or endangered categories; and expand protection for marine mammals, migratory birds, and habitats of local or regional significance.

### **3-4.4 PLANS**

(Reserved)

### **3-4.5 PERFORMANCE STANDARDS: ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITATS**

#### **3-4.5.1 Lists of Endangered and Threatened Species and Designations of Critical Habitats**

Appendices 3-4A through 3-4E are lists of the species or habitats that are subject to the protection of the standards in Section 3-4 through the formal consultation procedures of a DEP (Section 2-17.3). If a species or habitat is listed in more than one of the appendices referenced in this section, the most restrictive designation shall apply.

(a) All changes to the U.S. listings for any threatened or endangered species ( 50 CFR 17.11, 17.12) that may be present in the RMI shall be considered as included in Appendix 3-4A or 3-4B, as appropriate, upon their effective date in the U.S. and remain included unless otherwise determined through the review process at Section 2-22. Species currently designated under U.S. regulations that could be present at USAKA are listed in Appendices 3-4A and 3-4B. Appendix 3-4A shows the ten species currently listed by the United States as either threatened or endangered that may occur naturally in the RMI. Appendix 3-4B is reserved in case a plant species in the RMI is included as threatened or endangered on the U.S. list.

(b) All species that are proposed for designation, are candidates for designation, or are petitioned for designation according to U.S. statutes and regulations and that could be affected by USAKA activities also are covered by these standards. The species are covered in Appendix 3-4C, which currently contains no lists but is reserved in case species in the RMI become candidates for U.S. listing, are petitioned to be placed on the U.S. list, or become officially proposed for listing in the U.S. All changes to the U.S. listings for proposed, candidate or petitioned, endangered or threatened species that may be present in the RMI shall be considered as included in Appendix 3-4C upon their effective date in the U.S. and remain included unless otherwise determined through the review process at Section 2-22.

(c) All species and critical habitats designated by the RMI under applicable RMI statutes. Species currently designated under RMI statutes are listed in Appendix 3-4D. All changes in designations made under RMI statutes shall be considered as included in Appendix 3-4D upon their legally effective date in the RMI and remain included unless otherwise determined through the review process at Section 2-22.



**[3-4.5.1(d)]**

(d) Marine mammals designated under U.S. statutes and regulations (50 CFR 18 and 216) that may be affected by USAKA activities are incorporated in the Standards and are listed in Appendix 3-4E. All changes to the U.S. listings for protected marine mammals that may be present in the RMI shall be considered as included in Appendix 3-4E upon their effective date in the U.S. and remain included unless otherwise determined through the review process at Section 2-22.

(e) Species of sea turtles that occur in the wild at USAKA are listed threatened or endangered under the U.S. Endangered Species Act and RMI statute. These animals shall be afforded protection by the consultation procedures (Section 3-4.5.3), which require development of a DEP for any activity that may affect sea turtles in the wild. With regard to the sea turtles in the artificial pond on Kwajalein Island, USAKA shall develop standards and protocols for dispensing care and maintenance of the sea turtles and the artificial pond, in coordination with USFWS, USNMFS, and RMIEPA.

**3-4.5.2 (Reserved)**

**3-4.5.3 Consultation: Procedures for Implementing**

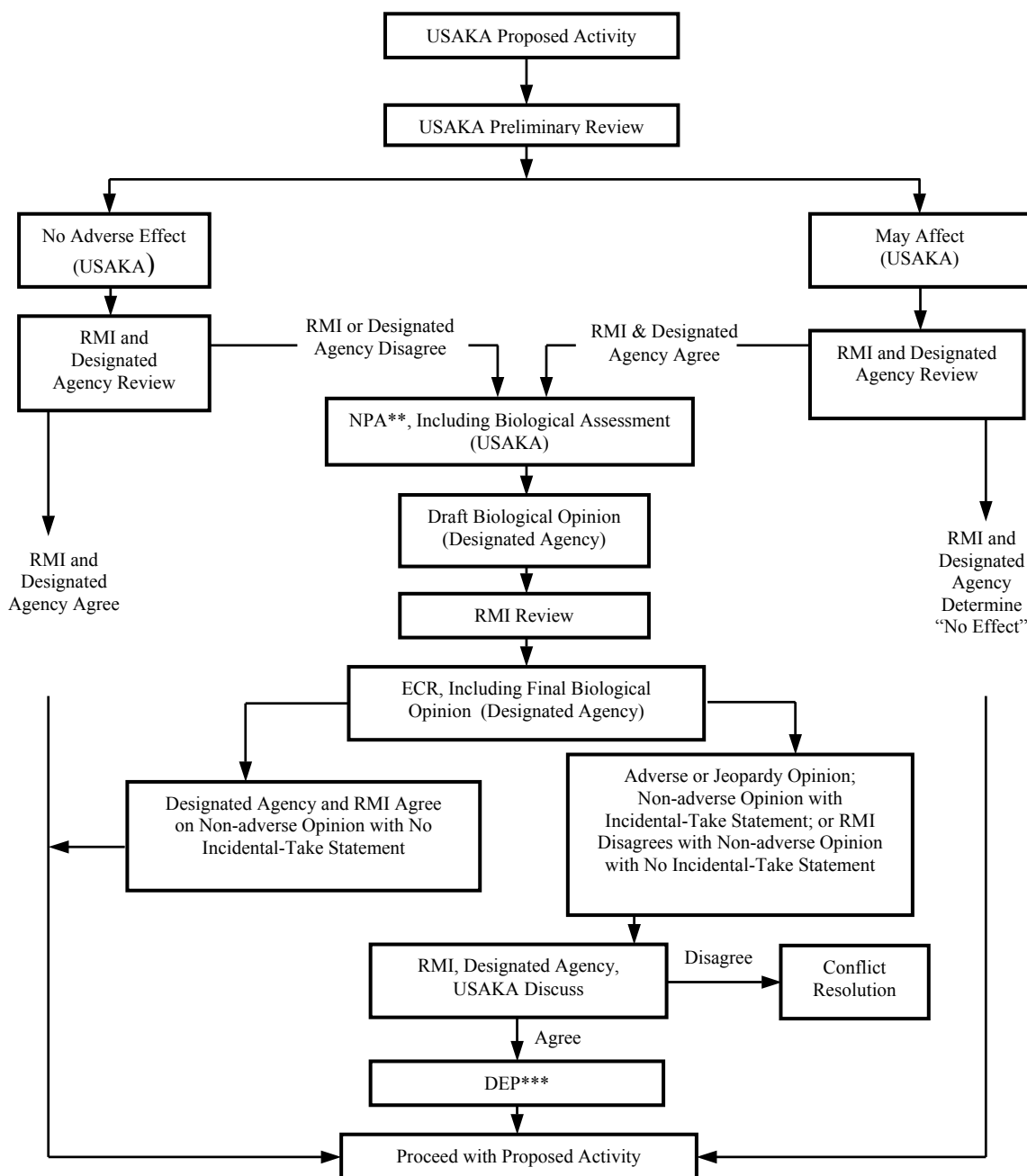
Figure 3-4.5 depicts the consultation process. This subsection incorporates, among other things, the notification procedures and establishes the consultation procedures required for all USAKA actions or activities that may affect the species and habitats listed in Appendices 3-4A through 3-4E. The consultation process also is intended to protect all critical habitats of the species listed in Appendices 3-4A thorough 3-4E.

The USFWS or the USNMFS shall be the designated U.S. agency for preparing biological opinions, referenced in Section 3-4.5.3(d) and (e) below. The USFWS and USNMFS shall, depending on the affected species and/or critical habitats, determine and advise USAKA and the Appropriate Agencies which agency will be the designated agency for preparing the biological opinion. The USFWS and USNMFS may elect to share responsibility, but will identify a single "designated" agency.

(a) USAKA shall conduct a preliminary review of proposed activities and determine whether actions funded, authorized, or carried out at USAKA "may affect" any species or habitats listed in Appendices 3-4A through 3-4E. Conversely, USAKA may find that an action has "no adverse effect" on any species or critical habitat. The preliminary review shall include a list of the species and critical habitats potentially affected by the proposed activity and the rationale for making a "may affect" or "no adverse effect" finding.

(b) In compliance with Section 2-7.1.4(a), USAKA shall provide the Appropriate Agencies with its preliminary conclusions on whether an activity or proposed action "may affect" or have "no adverse effect" by providing the Appropriate Agencies with copies of the findings of the preliminary review. The USFWS and USNMFS shall acknowledge receipt and identify the "designated agency" by facsimile or electronic mail. The RMIEPA shall also acknowledge receipt of the preliminary review by facsimile or electronic mail. Receipt of the acknowledgements by USAKA shall be considered the notification date. The designated agency and the RMIEPA shall respond to the preliminary review with comments within 30 days of

**FIGURE 3-4.5**  
**PROCEDURES FOR CONSULTATION ON ENDANGERED RESOURCES\***



\* The procedures apply to Appendices 3-4A, 3-4B, 3-4C, 3-4D, and 3-4E.

\*\* Other appropriate documentation, such as NEPA documents or studies, may be provided as the NPA.

\*\*\* NEPA decision documents may serve as a DEP. A deviation from the definition of DEPs is recognized because notifications for activities not requiring NPAs or NCAs is required for wildlife resources.

DEP: Document of Environmental Protection (2-17.3)

Designated Agency: USFWS or USNMFS

ECR: Environmental Comments and Recommendations (2-17.3.5)

NCA: Notice of Continuing Activity

NPA: Notice of Proposed Activity (2-17.3.2)

RMI: Republic of the Marshall Islands

USAKA: U. S. Army Kwajalein Atoll

receiving the determination. If no comments are received, USAKA may assume that the designated agency and the RMIEPA concur with its determination.

(c) If USAKA makes the "may affect" determination and the designated agency and RMIEPA concur, or if USAKA is otherwise notified by either the designated agency or the RMIEPA that formal consultation is necessary, USAKA shall complete and deliver to the Appropriate Agencies an NPA or NCA (Section 2-17.3.2) that includes a biological assessment. The biological assessment shall describe the activity in sufficient detail so that a biological opinion can be written by the designated agency. The threatened or endangered species and critical habitats potentially affected by the activity shall be identified and the effects of the activity on the species and habitats shall be analyzed. USAKA may informally consult with the designated agency and the RMIEPA on the preparation of the assessment and NPA/NCA.

(d) The designated agency shall review the NPA/NCA and prepare a draft biological opinion within 90 days of the submittal of the NPA/NCA. An additional 45 days shall be available for coordination with the Appropriate Agencies before the opinion is final.

(e) A final biological opinion shall be submitted to USAKA by the designated agency within 135 days of the submittal of the NPA/NCA and shall contain the opinion of the designated agency on whether the action is likely to jeopardize the continued existence of the species or to eliminate the species on USAKA. All appropriate findings for critical habitat also shall be addressed in the biological opinion. If the designated agency and RMIEPA agree on the finding of no adverse opinion with no incidental-take statement, no DEP is required. Incidental-take statements shall be included in all biological opinions that address a proposed action that involves the taking of a species listed in Appendices 3-4A through 3-4E. If the designated agency issues an adverse or a jeopardy opinion or a no adverse opinion with an incidental-take statement or if RMIEPA disagrees with the finding of a no adverse opinion, the designated agency, RMIEPA, and USAKA shall discuss the provisions of the biological opinion.

(f) An adverse biological opinion may include a jeopardy opinion, an opinion that finds elimination likely, or an adverse opinion involving critical habitat. Adverse opinions shall contain reasonable and prudent alternatives that will offset the likelihood of jeopardy, elimination, destruction, or adverse modification of a critical habitat. If incidental taking of the species is likely, such incidental taking shall be specified in the biological opinion if the taking does not result in jeopardy or elimination of the species.

(g) An adverse biological opinion contains provisions to which USAKA should adhere. An adverse opinion or a no adverse opinion with an incidental-take statement requires USAKA to complete a DEP (Section 2-17.3) before USAKA may proceed with a proposed activity. Biological opinions that are not adverse and contain no incidental-take statements do not require a DEP. A "no jeopardy" biological opinion or a "no elimination" opinion, however, can contain provisions for incidental taking and, therefore, require a DEP.

### **3-4.6 PERFORMANCE STANDARDS: OTHER WILDLIFE RESOURCES**

#### **3-4.6.1 Fish and Wildlife Species and Habitats of Special Concern**

Appendices 3-4F through 3-4H are lists of the species and habitats that are subject to protection through the coordination procedures of Section 3-4.6 that may include completion of a DEP (Section 2-17.3).

(a) Bird species listed in 50 CFR 10 pursuant to the MBCA that are potentially present in the RMI are listed in Appendix 3-4F. If the RMIEPA and USFWS agree that the intentional taking of a migratory bird listed in Appendix 3-4F may occur as a result of a continuing or proposed activity, the coordination procedure shall include preparation of a DEP. The provisions of Section 3-4.6.3(e) concerning non-acceptance of coordination recommendations by USAKA shall not apply to intentional migratory bird takings.

(b) Appendix 3-4G lists species and habitats in the RMI that are protected by CITES, or mutually agreed on by USAKA, USFWS, USNMFS, and the RMIEPA as being of special concern.

(c) Appendix 3-4H identifies additional marine and terrestrial habitats that are subject to the coordination procedures of Section 3-4.6.

#### **3-4.6.2 (Reserved)**

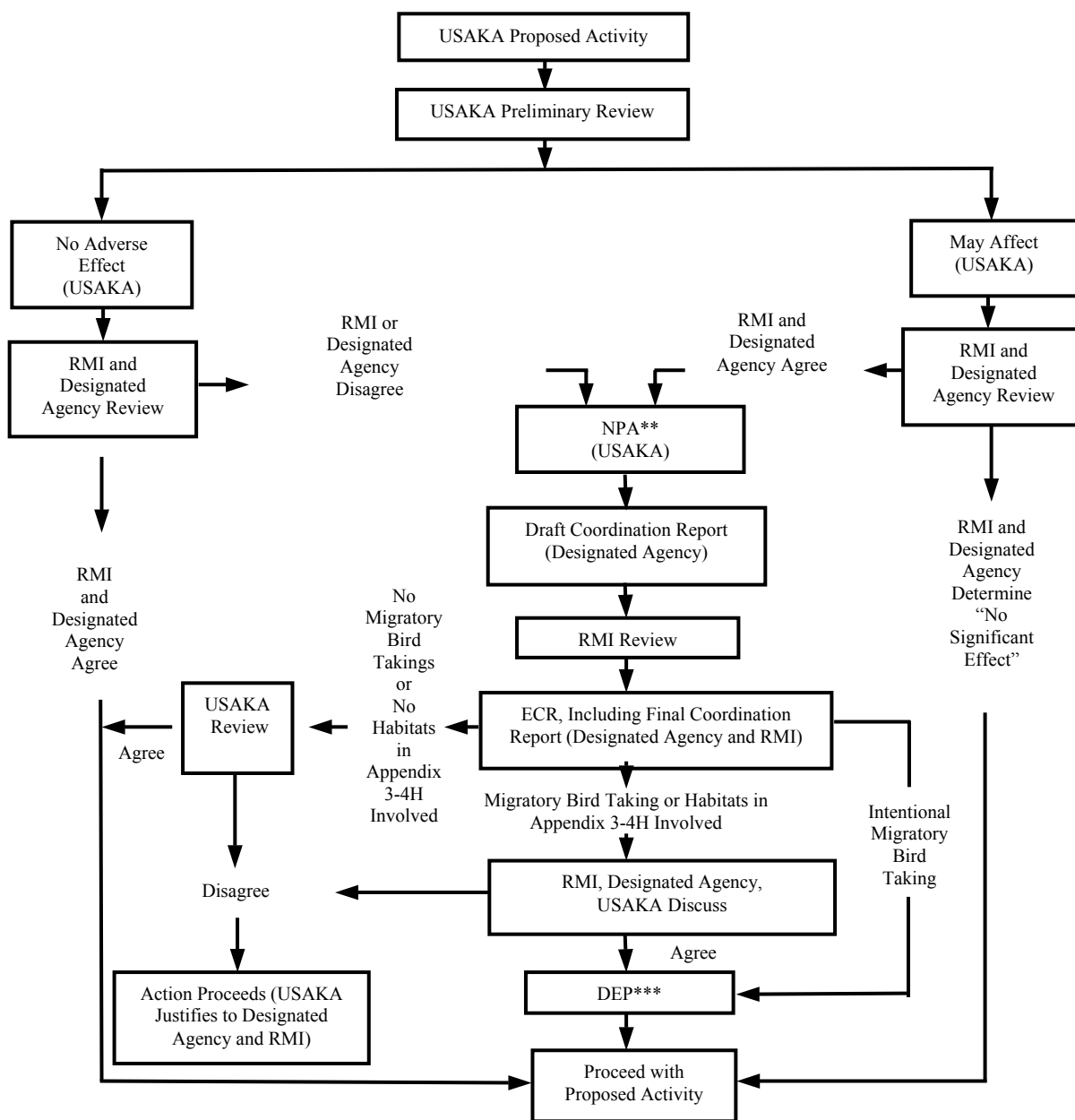
#### **3-4.6.3 Procedures for Coordination on Other Wildlife Resources at USAKA**

Figure 3-4.6 depicts the coordination process. Before implementing actions that may significantly affect fish and wildlife resources covered by Appendices 3-4F through 3-4H, USAKA shall coordinate with the Appropriate Agencies as described below. The USFWS or the USNMFS shall be the designated U.S. agency for preparing coordination reports, referenced in Sections 3-4.6.3(c) and (d). The USFWS and USNMFS shall, depending on the affected species and/or habitats, determine and advise USAKA and the Appropriate Agencies which agency will be the designated agency for preparing the coordination report. The USFWS and USNMFS may elect to share the responsibility, but will identify a single “designated” agency.

(a) USAKA shall conduct a preliminary review of proposed activities and determine whether actions funded, authorized, or carried out at USAKA “may affect” species or habitats listed in Appendices 3-4F through 3-4H. Conversely, USAKA may find that an action has “no adverse effect” on any species or habitat. The preliminary review shall include a list of the species and habitats potentially affected by the proposed activity and the rationale for making a “no adverse effect” or “may affect” finding.

(b) In compliance with Section 2-7.1.4(b), USAKA shall advise the Appropriate Agencies of its preliminary conclusions on whether an activity or action “may affect” or have “no adverse effect” by providing copies of the preliminary review. The USFWS and USNMFS shall acknowledge receipt of the preliminary review and identify the “designated” agency by facsimile

**FIGURE 3-4.6**  
**PROCEDURES FOR COORDINATION ON OTHER WILDLIFE RESOURCES\***



\* The procedures apply to Appendices 3-4F, 3-4G, and 3-4H.

\*\* Other appropriate documentation, such as NEPA documents or studies, may be provided as the NPA.

\*\*\* NEPA decision documents may serve as a DEP. A deviation from the definition of DEPs is recognized because notifications for activities not requiring NPAs or NCAs is required for wildlife resources.

DEP: Document of Environmental Protection (2-17.3),  
 Designated Agency: USFWS or USNMFS,  
 ECR: Environmental Comments and Recommendations,  
 NCA: Notice of Continuing Activity.

NPA: Notice of Proposed Activity (2-17.3.2),  
 RMI: Republic of the Marshall Islands,  
 USAKA: U. S. Army Kwajalein Atoll,

or electronic mail. The RMIEPA shall also acknowledge receipt of the review by facsimile or electronic mail. Receipt of the acknowledgments by USAKA shall be considered the date of notification. Within 30 days receiving the findings of the preliminary review, the RMIEPA and the designated agency shall review the preliminary findings of USAKA and respond with comments. If no comments are received, USAKA may assume that the designated agency and the RMIEPA concur with its findings.

(c) If USAKA makes a finding of "may affect," and the designated agency and RMIEPA concur, or if USAKA is otherwise notified by the RMIEPA or designated agency that coordination is necessary, USAKA shall complete and deliver to the Appropriate Agencies an NPA (Section 2-17.3.2). Within 90 days of receiving the NPA, the designated agency shall prepare and submit to USAKA a draft coordination report, which may also serve as a draft ECR for the designated agency. The report shall include appropriate coordination recommendations for preventing and mitigating the effects on the fish and wildlife species and habitats in Appendices 3-4F through 3-4H. Upon completion of the draft report, the designated agency shall submit a copy to the Appropriate Agencies for review.

(d) An additional 45 days shall be available for coordination with the Appropriate Agencies before the coordination report is final. USAKA shall give careful consideration to all recommendations in the coordination report and incorporate them into the action or activity to the fullest extent possible.

(e) If the designated agency, the RMIEPA, and USAKA agree that a migratory bird taking will occur or that a proposed activity will have a significant effect on a species or habitat listed in Appendices 3-4F through 3-4H, a DEP shall be prepared. Except in situations involving the intentional taking of a migratory bird listed in Appendix 3-4F and as provided in Section 3-4.6.1(a), USAKA may elect not to accept some or all of the recommendations presented in coordination reports and proceed without completing a DEP. In such situations USAKA shall communicate in writing to the Appropriate Agencies the reasons for not implementing the recommendations.

### **3-4.7 DISCHARGE LIMITS, EMISSION STANDARDS, POLLUTION CONTROL**

(Reserved)

### **3-4.8 PROHIBITIONS**

**3-4.8.1** Except as provided in a DEP according to Section 3-4.5.3(g) or 3-4.6.3(e), USAKA shall not take endangered or threatened species, modify critical habitats, or take migratory birds (Appendices 3-4A through 3-4F).

**3-4.8.2** USAKA shall implement procedures to prevent the import to USAKA or export from USAKA to a place other than the United States any wildlife, plant, or part thereof, listed in Appendices 3-4A through 3-4G or Appendices I through III of 50CFR23. USAKA shall implement procedures to prevent the export from USAKA to the United States any wildlife, plant, or part thereof, listed in Appendices 3-4A through 3-4G or Appendices I through III of

50CFR23, except as may be authorized by the USFWS, USNMFS or U.S. Customs Service in accordance with applicable U.S. statutes and regulations.

### **3-4.9 SPECIAL REQUIREMENTS**

**3-4.9.1** USAKA shall cooperate with and assist the USFWS and USNMFS in applying and enforcing any prohibitions, limitations or other requirements regarding endangered or threatened species, migratory birds, or any wildlife or plant listed in Appendices I through III of 50CFR23 as they may apply to individuals at USAKA acting in an individual capacity.

**3-4.9.2** USAKA shall conduct a natural resource baseline survey every two years to identify and inventory protected or significant fish, wildlife and habitat resources at USAKA (Appendices 3-4A through 3-4H). The results of the survey shall be used to update Appendices 3-4A through 3-4H, as appropriate, and the revisions shall be in effect unless otherwise determined through the review process at Section 22-2.

**APPENDIX 3-4A**  
**SPECIES PROTECTED UNDER U.S. ENDANGERED SPECIES ACT**  
**OF 1973 WITHIN U.S. ARMY KWAJALEIN ATOLL,**  
**REPUBLIC OF THE MARSHALL ISLANDS**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
<b>Dugong</b>		
Dugong	<i>Dugong dugon</i>	Endangered
<b>Turtles</b>		
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	Endangered
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered
Green Sea Turtle	<i>Chelonia mydas</i>	Threatened
Loggerhead Sea Turtle	<i>Caretta caretta</i>	Threatened
Olive Ridley Sea Turtle	<i>Lepidochelys olivacea</i>	Threatened
<b>Whales</b>		
Blue Whale	<i>Balaenoptera musculus</i>	Endangered
Finback Whale	<i>Balaenoptera physalus</i>	Endangered
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered
Sperm Whale	<i>Physeter catodon</i>	Endangered



**APPENDIX 3-4B**  
**ENDANGERED SPECIES: LISTED PLANTS**

(Reserved)

**APPENDIX 3-4C**  
**CANDIDATE, PETITIONED, AND PROPOSED SPECIES**  
**(BOTH ANIMALS AND PLANTS) AND CRITICAL HABITATS**  
(Reserved)

**APPENDIX 3-4D**  
**SPECIES PROTECTED UNDER REPUBLIC OF MARSHALL ISLANDS**  
**STATUTES THAT CAN TRIGGER CONSULTATION PROCEDURES**

<b>Common Name</b>	<b>Scientific Name</b>	<b>RMI Statute*</b>
Blue Whale	<i>Balaenoptera musculus</i>	(1)
Sperm Whale	<i>Physeter catodon</i>	(1)
Ratak Micronesian Pigeon	<i>Ducula oceania ratakensis</i>	(1)
Hawksbill Turtle	<i>Eretmochelys imbricata</i>	(1)(4)
Leatherback Turtle	<i>Dermochelys coriacea</i>	(1)
Green Sea Turtle	<i>Chelonia mydas</i>	(4)
Loggerhead Sea Turtle	<i>Caretta caretta</i>	(4)
Olive Ridley Sea Turtle	<i>Lapidochelys olivacea</i>	(4)
Offshore Spotted Dolphin	<i>Stenella attenuata attenuata</i>	(2)
Coastal Spotted Dolphin	<i>Stenella attenuata graffmani</i>	(2)
Eastern Spinner Dolphin	<i>Stenella longirostris orientalis</i>	(2)
Whitebelly Spinner Dolphin	<i>Stenella longirostris longirostris</i>	(2)
Costa Rican Spinner Dolphin	<i>Stenella longirostris centroamericana</i>	(2)
Common Dolphin	<i>Delphinus delphis</i>	(2)
Striped Dolphin	<i>Stenella coeruleoalba</i>	(2)

**APPENDIX 3-4D (Continued)**  
**SPECIES PROTECTED UNDER REPUBLIC OF MARSHALL ISLANDS**  
**STATUTES THAT CAN TRIGGER CONSULTATION PROCEDURES**

Common Name	Scientific Name	RMI Statute*
Any other species of small-toothed cetaceans		(2)
	<i>Trochus niloticus</i> (formerly genus <i>Tectus</i> )	(3)
	<i>Trochus maximus</i> (formerly genus <i>Tectus</i> )	(3)
All Sponges		(4)
Black-Lip Mother-of-Pearl Oyster	<i>Pinctada margaritifera</i>	(4)

\*Republic of the Marshall Islands statutes:

- (1) Endangered Species Act 1975, 8 MIRC, Chapter 5
- (2) Marine Mammal Protection Act 1990, 33 MIRC, Chapter 5
- (3) Marine Resources (Trochus) Act 1983, 33 MIRC, Chapter 3
- (4) Marine Resources Act, 33 MIRC, Chapter 1

## APPENDIX 3-4E

**MARINE MAMMALS PROTECTED UNDER MARINE MAMMAL  
PROTECTION ACT OF 1972 WITHIN U.S. ARMY KWAJALEIN ATOLL,  
REPUBLIC OF THE MARSHALL ISLANDS**

Common Name	Scientific Name	Status
Spinner Dolphin	<i>Stenella longirostris</i>	Resident
Pacific Bottlenose Dolphin	<i>Tursiops gilli</i>	Resident
Pygmy Sperm Whale	<i>Kogia breviceps</i>	Migratory
Humpback Whale	<i>Megaptera novaeangliae</i>	Migratory
Sperm Whale	<i>Physeter catodon</i>	Resident
Blue Whale	<i>Balaenoptera musculus</i>	Migratory
Finback Whale	<i>Balaenoptera physalus</i>	Migratory
False Killer Whale	<i>Pseudorca crassidens</i>	Migratory
Short-Finned Pilot Whale	<i>Globicephala macrorhynchus</i>	Migratory
Melon Headed Whale	<i>Peponocephala electra</i>	Resident
Pygmy Killer Whale	<i>Feresa attenuata</i>	Resident
Risso's Dolphin	<i>Grampus griseus</i>	Resident
Bottlenose Dolphin	<i>Tursiops sp.</i>	Resident
Killer Whale	<i>Orcinus orca</i>	Resident
Blainville's Beaked Whale	<i>Mesoplodon densirostris</i>	Migratory

## APPENDIX 3-4F

**MIGRATORY BIRDS PROTECTED UNDER MIGRATORY BIRD  
CONSERVATION ACT WITHIN U.S. ARMY KWAJALEIN ATOLL,  
REPUBLIC OF THE MARSHALL ISLANDS**

Common Name	Scientific Name	Status
<b>Shearwaters and Petrels</b>	<b>Procellariidae</b>	
Mottled Petrel	<i>Pterodroma inexpectata</i>	Rare Migrant
Wedge-Tailed Shearwater	<i>Puffinus pacificus</i>	Uncommon Visitor
Sooty Shearwater	<i>Puffinus griseus</i>	Common Migrant
<b>Tropicbirds</b>	<b>Phaethontidae</b>	
White-Tailed Tropicbird	<i>Phaethon lepturus</i>	Rare Visitor
Red-Tailed Tropicbird	<i>Phaethon rubricauda</i>	Rare Visitor
<b>Boobies</b>	<b>Sulidae</b>	
Brown Booby	<i>Sula leucogaster</i>	Uncommon Resident
Red-Footed Booby	<i>Sula sula</i>	Uncommon Resident
<b>Frigatebirds</b>	<b>Fregatidae</b>	
Great Frigatebird	<i>Fregata minor</i>	Uncommon Resident
<b>Hérons and Egrets</b>	<b>Ardeidae</b>	
Pacific Reef Heron	<i>Egretta sacra</i>	Common Resident
Cattle Egret	<i>Bubulcus ibis</i>	Rare Vagrant

## APPENDIX 3-4F (Continued)

**MIGRATORY BIRDS PROTECTED UNDER MIGRATORY BIRD  
CONSERVATION ACT WITHIN U.S. ARMY KWAJALEIN ATOLL, REPUBLIC  
OF THE MARSHALL ISLANDS**

Common Name	Scientific Name	Status
<b>Geese and Ducks</b>	<b>Anatidae</b>	
Canada Goose	<i>Branta canadensis</i>	Accidental Vagrant
Green-Winged Teal	<i>Anas crecca</i>	Uncommon Migrant
Mallard	<i>Anas platyrhynchos</i>	Rare Migrant
Northern Pintail	<i>Anas acuta</i>	Uncommon Migrant
Garganey	<i>Anas querquedula</i>	Accidental Vagrant
Northern Shoveler	<i>Anas clypeata</i>	Uncommon Migrant
Tufted Duck	<i>Aythya fuligula</i>	Accidental Vagrant
<b>Plovers</b>	<b>Charadriidae</b>	
Black-Bellied Plover	<i>Pluvialis squatarola</i>	Uncommon Migrant
Lesser Golden-Plover	<i>Pluvialis dominica</i>	Abundant Migrant
Mongolian Plover	<i>Charadrius mongolus</i>	Uncommon Migrant
Common Ringed or	<i>Charadrius hiaticula</i>	Accidental Migrant
Semipalmated Plover	<i>Charadrius semipalmatus</i>	Accidental Migrant

## APPENDIX 3-4F (Continued)

**MIGRATORY BIRDS PROTECTED UNDER MIGRATORY BIRD  
CONSERVATION ACT WITHIN U.S. ARMY KWAJALEIN ATOLL, REPUBLIC  
OF THE MARSHALL ISLANDS**

Common Name	Scientific Name	Status
<b>Sandpipers and Waders</b>	<b>Scolopacidae</b>	
Greater Yellowlegs	<i>Tringa melanoleuca</i>	Accidental Migrant
Lesser Yellowlegs	<i>Tringa flavipes</i>	Accidental Migrant
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Accidental Migrant
Wood Sandpiper	<i>Tringa glareola</i>	Accidental Migrant
Wandering Tattler	<i>Heteroscelus incanus</i>	Common Migrant
Grey-Tailed Tattler	<i>Heteroscelus brevipes</i>	Uncommon Migrant
Whimbrel	<i>Numenius phaeopus</i>	Common Migrant
Bristle-Thighed Curlew	<i>Numenius tahitiensis</i>	Uncommon Migrant
Black-Tailed Godwit	<i>Limosa limosa</i>	Rare Migrant
Hudsonian Godwit	<i>Limosa haemastica</i>	Accidental Migrant
Bar-Tailed Godwit	<i>Limosa lapponica</i>	Uncommon Migrant
Ruddy Turnstone	<i>Arenaria interpres</i>	Abundant Migrant
Sanderling	<i>Calidris alba</i>	Uncommon Migrant
Pectoral Sandpiper	<i>Calidris melanotos</i>	Accidental Migrant
Sharp-Tailed Sandpiper	<i>Calidris acuminata</i>	Uncommon Migrant
Curlew Sandpiper	<i>Calidris ferruginea</i>	Accidental Migrant
Ruff	<i>Philomachus pugnax</i>	Accidental Migrant



**APPENDIX 3-4F (Continued)**

**MIGRATORY BIRDS PROTECTED UNDER MIGRATORY BIRD  
CONSERVATION ACT WITHIN U.S. ARMY KWAJALEIN ATOLL, REPUBLIC  
OF THE MARSHALL ISLANDS**

Common Name	Scientific Name	Status
<b>Gulls, Terns, and Noddies</b>	<b>Laridae</b>	
Franklin's Gull	<i>Larus pipixcan</i>	Accidental Vagrant
Black-Naped Tern	<i>Sterna sumatrana</i>	Common Resident
Little Tern	<i>Sterna albifrons</i>	Accidental Visitor
Sooty Tern	<i>Sterna fuscata</i>	Uncommon Visitor
Brown Noddy	<i>Anous stolidus</i>	Common Resident
Black Noddy	<i>Anous minutus</i>	Abundant Resident
White Tern	<i>Gygis alba</i>	Common Resident
Great Crested Tern	<i>Sterna bergii</i>	Common Resident
<b>Swifts</b>	<b>Apodidae</b>	
Fork-Tailed Swift	<i>Apus pacificus</i>	Accidental Vagrant
<b>Cuckoos</b>	<b>Cuculidae</b>	
Long-tailed Cuckoo	<i>Eudynamis taitensis</i>	Uncommon Visitor

Latham's Snipe (*Gallinago hardwickii*), Oriental Pratincole (*Glareola maldivarum*), Great Crested Tern (*Sterna bergii*), Long-tailed Cuckoo (*Eudynamis taitensis*) and the Sacred Kingfisher (*Halcyon sancta*) are bird species found within Kwajalein Atoll but are not identified on the List of Migratory Birds.

References: Species list and status from R. B. Clapp, Notes on the Birds of Kwajalein Atoll, Marshall Islands, Atoll Research Bulletin No. 342, September 1990; and P. Pyle and J. Engbring, Checklist of Birds of Micronesia, Elepaio 46:6, December 1985.

**APPENDIX 3-4G**

**SPECIES AND HABITATS OF SIGNIFICANT BIOLOGICAL**

**IMPORTANCE ON LANDS AND WATERS UNDER CONTROL OF**

**USAKA, REPUBLIC OF THE MARSHALL ISLANDS**

<b>TABLE 3-4G.1</b>		
<b>Species List Derived From Republic Of Marshall Islands Native Species Protected Under The Convention On International Trade In Endangered Species Of Wild Fauna And Flora (CITES)</b>		
<b>Common Name</b>	<b>Scientific Name</b>	<b>Appendix*</b>
<b>Coelenterates</b>		
<b>Order Athecata</b>		
Fire Coral	<i>Millepora exaesa</i>	2
Fire Coral	<i>Millepora platyphylla</i>	2
Fire Coral	<i>Millepora tenera</i>	2
<b>Order Stolonifera</b>		
Organ Pipe Coral	<i>Tubipora musica</i>	2
<b>Order Scleractinia</b>		
<b>Family Acroporidae</b>		
Staghorn Coral	<i>Acropora acuminata</i>	2
Staghorn Coral	<i>Acropora aspera</i>	2
Staghorn Coral	<i>Acropora cytherea</i>	2
Staghorn Coral	<i>Acropora formosa</i>	2
Staghorn Coral	<i>Acropora horrida</i>	2
Staghorn Coral	<i>Acropora humilis</i>	2
Staghorn Coral	<i>Acropora hyacinthus</i>	2
Staghorn Coral	<i>Acropora irregularis</i>	2
Staghorn Coral	<i>Acropora monticulosa</i>	2
Staghorn Coral	<i>Acropora palifera</i>	2
Staghorn Coral	<i>Acropora tenuis</i>	2
Staghorn Coral	<i>Acropora valida</i>	2
Staghorn Coral	<i>Acropora vauhani</i>	2
Staghorn Coral	<i>Acropora virgata</i>	2
Staghorn Coral	<i>Acropora spp.</i>	2
<b>Family Pocilloporidae</b>		
Brush Coral	<i>Pocillopora damicornis</i>	2
Brush Coral	<i>Pocillopora danae</i>	2
Brush Coral	<i>Pocillopora elegans</i>	2
Brush Coral	<i>Pocillopora eydouxi</i>	2
Brush Coral	<i>Pocillopora meandrina</i>	2
Brush Coral	<i>Pocillopora verrucosa</i>	2

<b>TABLE 3-4G.1</b> <b>Species List Derived From Republic Of Marshall Islands Native Species Protected</b> <b>Under The Convention On International Trade In Endangered Species Of</b> <b>Wild Fauna And Flora (CITES)</b>		
<b>Common Name</b>	<b>Scientific Name</b>	<b>Appendix*</b>
Brush Coral	<i>Pocillopora spp.</i>	2
Birdnest Coral	<i>Seriatopora hystrix</i>	2
Cauliflower Coral	<i>Stylophora pistillata</i>	2
Family Agariciidae		
Cactus Coral	<i>Pavona cactus</i>	2
Cactus Coral	<i>Pavona clavus</i>	2
Cactus Coral	<i>Pavona maldivensis</i>	2
Cactus Coral	<i>Pavona varians</i>	2
Cactus Coral	<i>Pavona spp.</i>	2
Family Fungiidae		
Mushroom Coral	<i>Fungia concinna</i>	2
Mushroom Coral	<i>Fungia danai</i>	2
Mushroom Coral	<i>Fungia fungites</i>	2
Mushroom Coral	<i>Fungia scutaria</i>	2
Feather Coral	<i>Polyphyllia talpina</i>	2
Bowl Coral	<i>Halomitra spp.</i>	2
Family Helioporidae		
Blue Coral	<i>Heliopora coerulea</i>	2
Family Pectiniidae		
Lettuce Coral	<i>Pectinia spp.</i>	2
Family Faviidae		
Brain Coral	<i>Favia pallida</i>	2
Brain Coral	<i>Favia speciosa</i>	2
Brain Coral	<i>Favia stelligera</i>	2
Brain Coral	<i>Favia spp.</i>	2
Brain Coral	<i>Platygyra spp.</i>	2
Family Merulinidae		
Merulinas Coral	<i>Merulina spp.</i>	2
Family Mussidae		
Brain Coral	<i>Lobophyllia spp.</i>	2
Family Caryophylliidae		
Trumpet Coral	<i>Euphyllia glabrescens</i>	2
Order Antipatharia		
Black Coral	<i>Cirrhipathes spp.</i>	2
<b>Mollusks</b>		
Class Pelecypoda		
Family Tridacnidae		
Giant Clam	<i>Tridacna gigas</i>	2

<b>TABLE 3-4G.1</b> <b>Species List Derived From Republic Of Marshall Islands Native Species Protected</b> <b>Under The Convention On International Trade In Endangered Species Of</b> <b>Wild Fauna And Flora (CITES)</b>		
<b>Common Name</b>	<b>Scientific Name</b>	<b>Appendix*</b>
Giant Clam	<i>Tridacna maxima</i>	2
Giant Clam	<i>Tridacna squamosa</i>	2
Giant Clam	<i>Tridacna spp.</i>	2
Giant Clam	<i>Hippopus hippopus</i>	2
Class Gastropoda		
Family Strombidae		
Giant Finger Shell	<i>Lambis truncata</i>	--
Spider Conch Shell	<i>Lambis scorpius</i>	--
<b>Mammals</b>		
Order Cetacea		
All species of whales, dolphins, and porpoises in the order Cetacea. Note: The cetacean fauna in the Republic of the Marshall Islands is not well described in the scientific literature.		2 (Except those in Appendix 1 or in an earlier Appendix 2.)
<b>Birds</b>		
Order Ciconiiformes		
Cattle Egret	<i>Bubulcus ibis</i>	3
Order Anseriformes		
Garganey	<i>Anas querquedula</i>	3
Northern Pintail	<i>Anas acuta</i>	3
Northern Shoveler	<i>Anas clypeata</i>	3
Green-Winged Teal	<i>Anas crecca</i>	3
<b>Reptiles</b>		
Order Testudinata		
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	1
Order Testudinata		
Family Cheloniidae		
All species in the family Cheloniidae		1
Green Sea Turtle	<i>Chelonia mydas</i>	1
Hawksbill Turtle	<i>Eretmochelys imbricata</i>	1
Loggerhead Sea Turtle	<i>Caretta caretta</i>	1
Olive Ridley Sea Turtle	<i>Lepidochelys olivacea</i>	1
Reference: Marine invertebrate species list developed from <i>Marine Environmental Assessment Report on United States Army Leased Lands at Kwajalein Atoll</i> , prepared for the U.S. Army Corps of Engineers, Pacific Ocean Division, August 1988.		
* Convention on International Trade in Endangered Species (CITES) Appendix that applies.		

TABLE 3-4G.2 NON-CITES SPECIES OF CONCERN		
Fish		
Common Name	Scientific Name	Marshallese Name
Napoleon wrasse	<i>Cheilinus undulatus</i>	Labbo
Giant grouper	<i>Epinephalus lanceolatus</i>	Jauwe, Kidiaj
Giant coral trout	<i>Plectropomus laevis</i>	Jowanuron

<b>TABLE 3-4G.3</b> <b>Marine And Terrestrial Habitats Of Significant Biological Importance</b> <b>On Lands Under Lease To USAKA</b>	
<b>Island</b>	<b>Habitats</b>
Kwajalein	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Quarry Pits</p> <p>Seagrass Beds</p> <p>Intertidal Zone</p> <p>Terrestrial Habitats</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>
Roi-Namur	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Seagrass Beds</p> <p>Intertidal Zone</p> <p>Terrestrial Habitats</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p> <p>Reef Heron Breeding Sites</p>
Meck	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Intertidal Zone</p> <p>Reef Pass</p> <p>Terrestrial Habitats</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>

<b>TABLE 3-4G.3</b> <b>Marine And Terrestrial Habitats Of Significant Biological Importance</b> <b>On Lands Under Lease To USAKA</b>	
<b>Island</b>	<b>Habitats</b>
Omelek	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Quarry Pits</p> <p>Intertidal Zone</p> <p>Terrestrial Habitats</p> <p>Mixed Broadleaf Forest</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>
Ennylabegan	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Intertidal Zone</p> <p>Reef Pass</p> <p>Terrestrial Habitats</p> <p>Mixed Broadleaf Forest</p> <p>Pemphis Forest</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>
Legan	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Quarry Pits</p> <p>Intertidal Zone</p> <p>Reef Pass</p> <p>Terrestrial Habitats</p> <p>Mixed Broadleaf Forest</p> <p>Central Salt Pond</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>

<b>TABLE 3-4G.3</b> <b>Marine And Terrestrial Habitats Of Significant Biological Importance</b> <b>On Lands Under Lease To USAKA</b>	
<b>Island</b>	<b>Habitats</b>
Illeginni	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Intertidal Zone</p> <p>Reef Pass</p> <p>Terrestrial Habitats</p> <p>Mixed Broadleaf Forest</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>
Gagan	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Quarry Pits</p> <p>Intertidal Zone</p> <p>Terrestrial Habitats</p> <p>Mixed Broadleaf Forest</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>
Gellinam	<p>Marine Habitats</p> <p>Lagoon-Facing Reef Slope and Reef Flat</p> <p>Interisland Reef Flat</p> <p>Lagoon Floor</p> <p>Ocean-Facing Reef Slope and Reef Flat</p> <p>Quarry Pits</p> <p>Intertidal Zone</p> <p>Terrestrial Habitats</p> <p>Pisonia Forest</p> <p>Seabird Colonies</p> <p>Shorebird Sites</p>

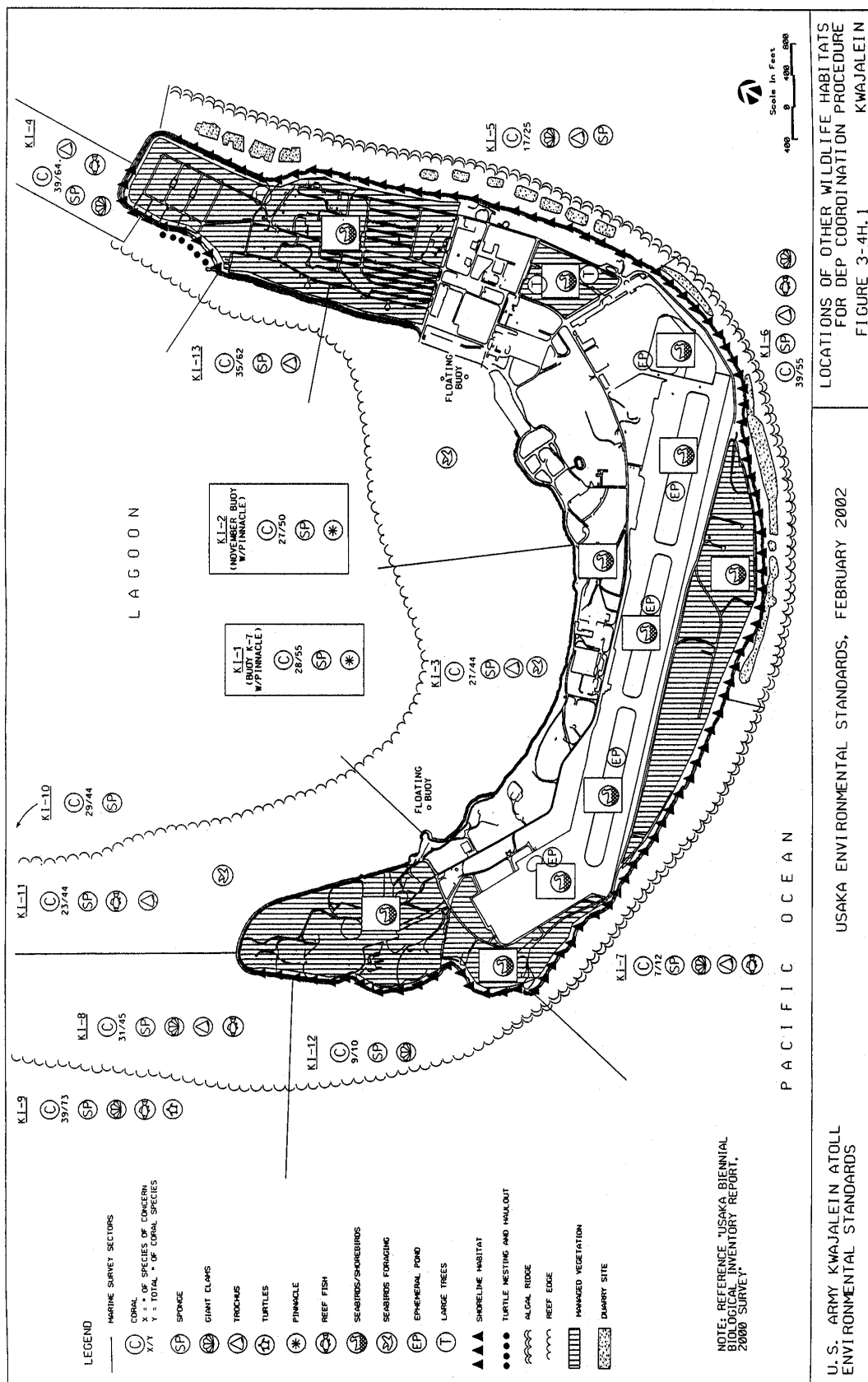


<b>TABLE 3-4G.3</b> <b>Marine And Terrestrial Habitats Of Significant Biological Importance</b> <b>On Lands Under Lease To USAKA</b>	
<b>Island</b>	<b>Habitats</b>
Eniwetak	Marine Habitats Lagoon-Facing Reef Slope and Reef Flat Interisland Reef Flatus Lagoon Floor Intertidal Zone Reef Pass  Terrestrial Habitats Pisonia Forest Seabird Colonies Shorebird Sites
Ennugarret	Marine Habitats Lagoon-Facing Reef Slope and Reef Flat Interisland Reef Flat Lagoon Floor Ocean-Facing Reef Slope and Reef Flat Intertidal Zone  Terrestrial Habitats Mixed Broadleaf Forest Seabird Colonies Shorebird Sites
Reference: <i>USAKA Biennial Biological Inventory Report</i> , 1996 Survey. U.S. Fish and Wildlife Service, Pacific Islands Ecoregion; and U.S. National Marine Fisheries Service, Southwest Region.	

**APPENDIX 3-4H**  
**OTHER WILDLIFE HABITATS**  
**POTENTIALLY SUBJECT TO DEP COORDINATION PROCEDURE**

<b>TABLE 3-4H.1</b> <b>Description Of Other Wildlife Resource Habitats</b> <b>Potentially Subject To DEP Coordination Procedure</b>		
<b>Island</b>	<b>General Location</b>	<b>Description</b>
Kwajalein	See Figure 3-4H.1 in Appendix 3-4H	Sea grass <sup>(1)</sup> , coral, fishery area, reef fish, algal ridge, seabird roosting
Roi Namur	See Figure 3-4H.2 in Appendix 3-4H	Sea grass <sup>(1)</sup> , coral, fishery area, giant clams, juvenile fishery ground, algal ridge, palm forest, forested or wooded area, seabird roosting <sup>(4)</sup> , coconut crab area, potential sea turtle nesting area
Meck	See Figure 3-4H.3 in Appendix 3-4H	Coral, fishery area, giant clams, reef fish, algal ridge, seabird roosting, seabird nesting
Omelek	See Figure 3-4H.4 in Appendix 3-4H	Coral, giant clams, reef fish, octopus, forested or wooded area, seabird roosting, seabird nesting
Ennylabegan	See Figure 3-4H.5 in Appendix 3-4H	Coral, fishery area, giant clams, reef fish, potential sea turtle nesting habitat, seabird roosting, Pemphis forest <sup>(2)</sup>
Legan	See Figure 3-4H.6 in Appendix 3-4H	Coral, giant clams, reef fish, seabird roosting, seabird nesting, coconut crab area, palm tree forest, mixed broadleaf forest <sup>(3)</sup>
Illeginni	See Figure 3-4H.7 in Appendix 3-4H	Coral, fishery area, giant clams, reef fish, seabird roosting, seabird nesting, palm tree stand, forest/wooded area, potential sea turtle nesting habitat
Gagan	See Figure 3-4H.8 in Appendix 3-4H	Coral, fishery area, giant clams, reef fish, lobster, algal ridge, forest/wooded area, seabird roosting, seabird nesting, lagoon-facing reef flat and reef slope <sup>(5)</sup>

<b>TABLE 3-4H.1</b> <b>Description Of Other Wildlife Resource Habitats</b> <b>Potentially Subject To DEP Coordination Procedure</b>		
<b>Island</b>	<b>General Location</b>	<b>Description</b>
Gellinam	See Figure 3-4H.9 in Appendix 3-4H	Coral, reef fish, algal ridge, forest or wooded area <sup>(7)</sup> , seabird roosting, seabird nesting <sup>(7)</sup> , lagoon-facing reef slope and reef flat <sup>(6)</sup>
Eniwetak	See Figure 3-4H.10 in Appendix 3-4H	Coral, giant clams, reef fish, algal ridge, forest/wooded area, seabird nesting, potential sea turtle nesting area
Ennugarret	See Figure 3-4H.11 in Appendix 3-4H	Palm tree stand, forest, seabird nesting, coconut crab, algal ridge, potential sea turtle nesting habitat
<b>Notes:</b> (1) Seagrass beds ( <i>Halophila minor</i> ) present only on Kwajalein and Roi- Namur within U.S. Army Kwajalein Atoll (USAKA). (2) Only Pemphis forest type within USAKA. (3) Best mixed broadleaf forest within USAKA. (4) Only documented breeding of Pacific Reef Heron ( <i>Egretta sacra</i> ) within USAKA. (5) One of the most luxuriant lagoon coral reefs within USAKA. (6) Largest giant clam ( <i>Tridacna gigas</i> ) population within USAKA. (7) Best <i>Pisonia</i> forest and largest nesting colony of black-noddy seabirds ( <i>Anous minutus</i> ) within USAKA.  Reference: <i>USAKA Biennial Biological Inventory Report</i> , 1996 Survey. U.S. Fish and Wildlife Service, Pacific Islands Ecoregion; and U.S. National Marine Fisheries Service, Southwest Region.		



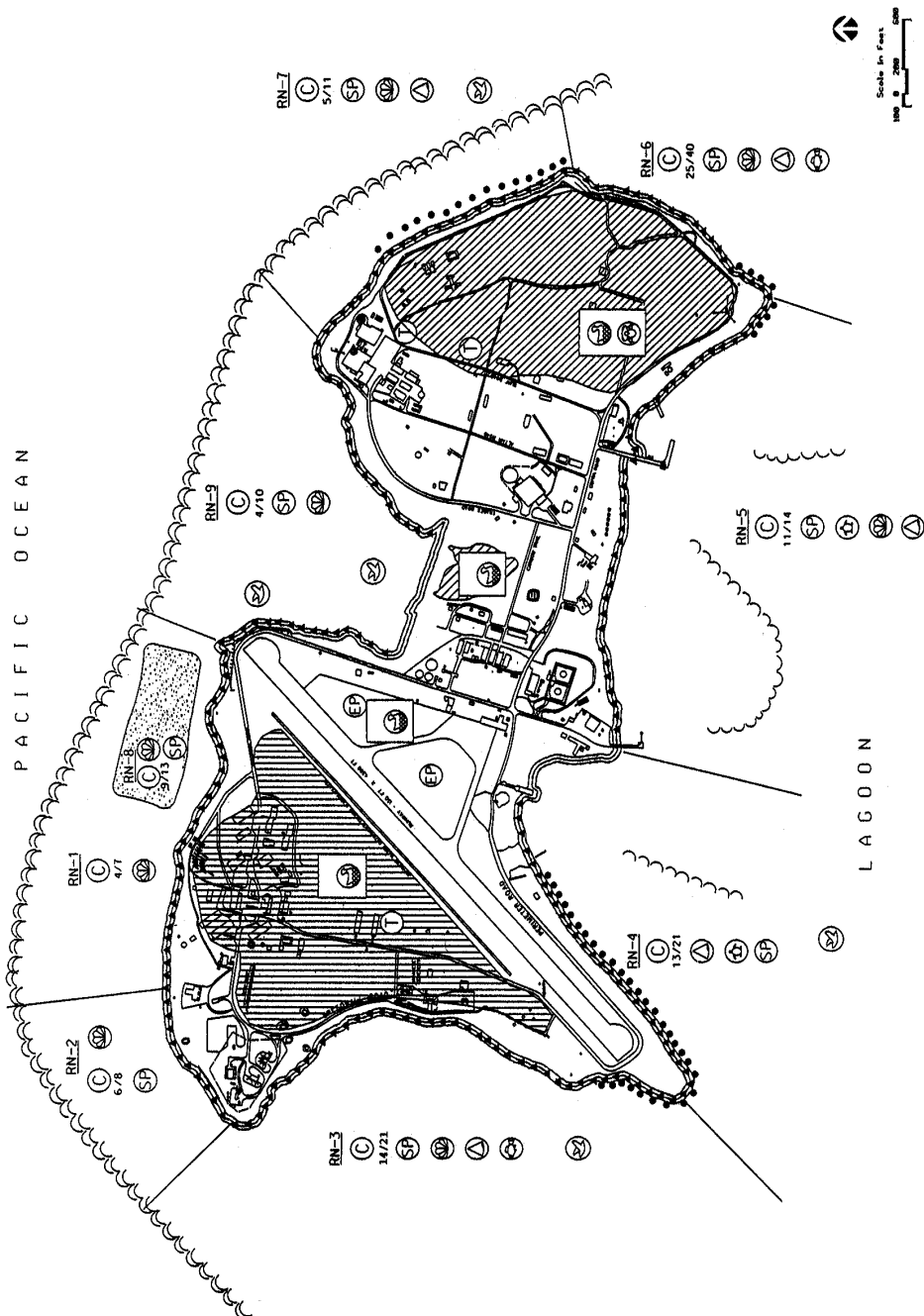
LEGEND

- MARINE SURVEY SECTIONS
- (C) CORAL X = \* OF SPECIES OF CONCERN  
X/Y Y = TOTAL OF CORAL SPECIES
- (SF) SPONGE
- (GC) GIANT CLAMS
- (TR) TROCHUS
- (TU) TURTLES
- (RF) REEF FISH
- (SB) SEABIRDS / SHOREBIRDS
- (SF) SEABIRDS FORAGING
- (CC) COCONUT CRABS
- (EP) EPHEMERAL POND
- (T) LARGE TREES
- SHORELINE HABITAT
- \*\*\*\*\* TURTLE NESTING AND HAILOUT
- ALGAL RIDGE
- REEF EDGE
- MANAGED VEGETATION
- LITTORAL FOREST
- QUARRY SITE

NOTE: REFERENCE USAKA BIENNIAL BIOLOGICAL INVENTORY REPORT, 2000 SURVEY.

PACIFIC OCEAN

LAGOON

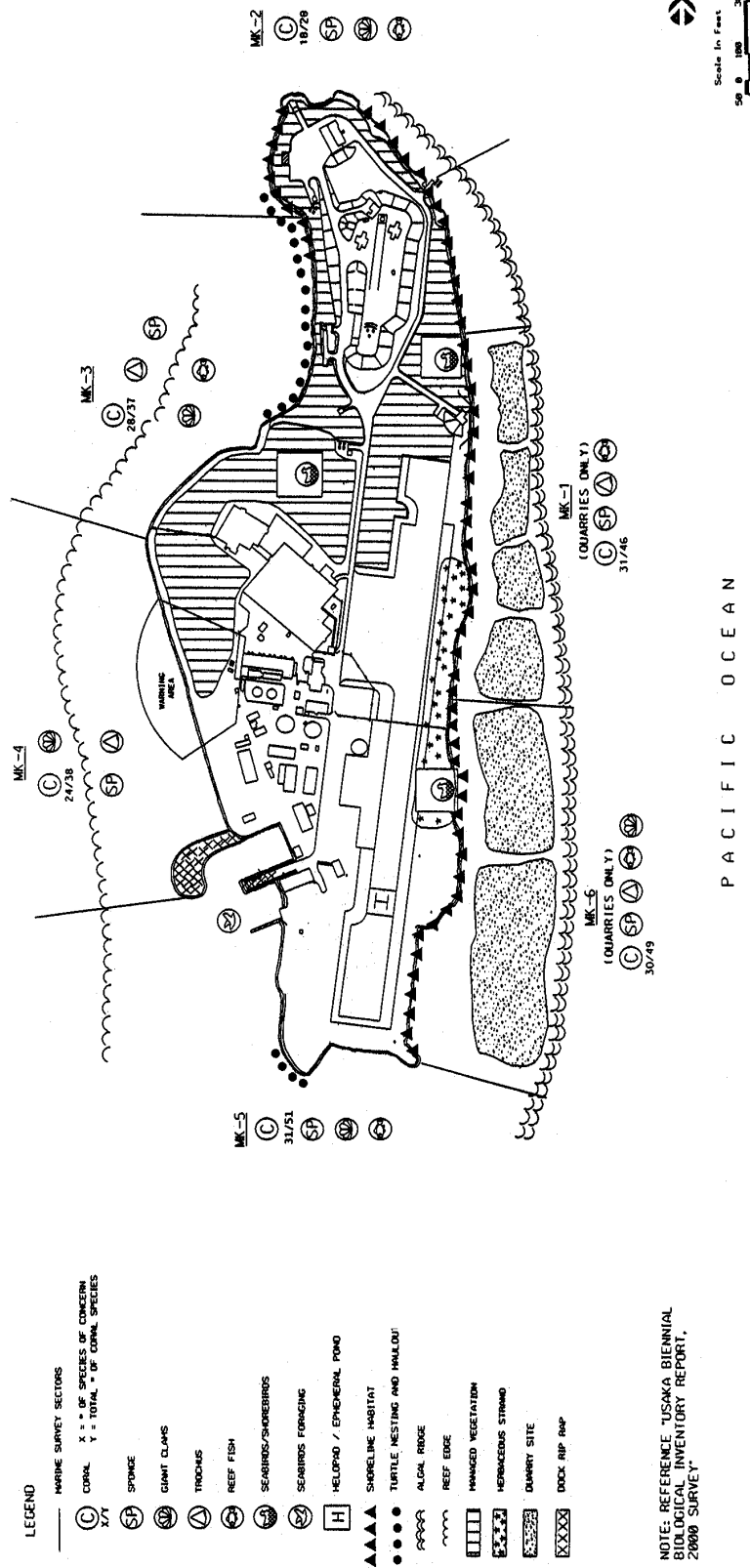


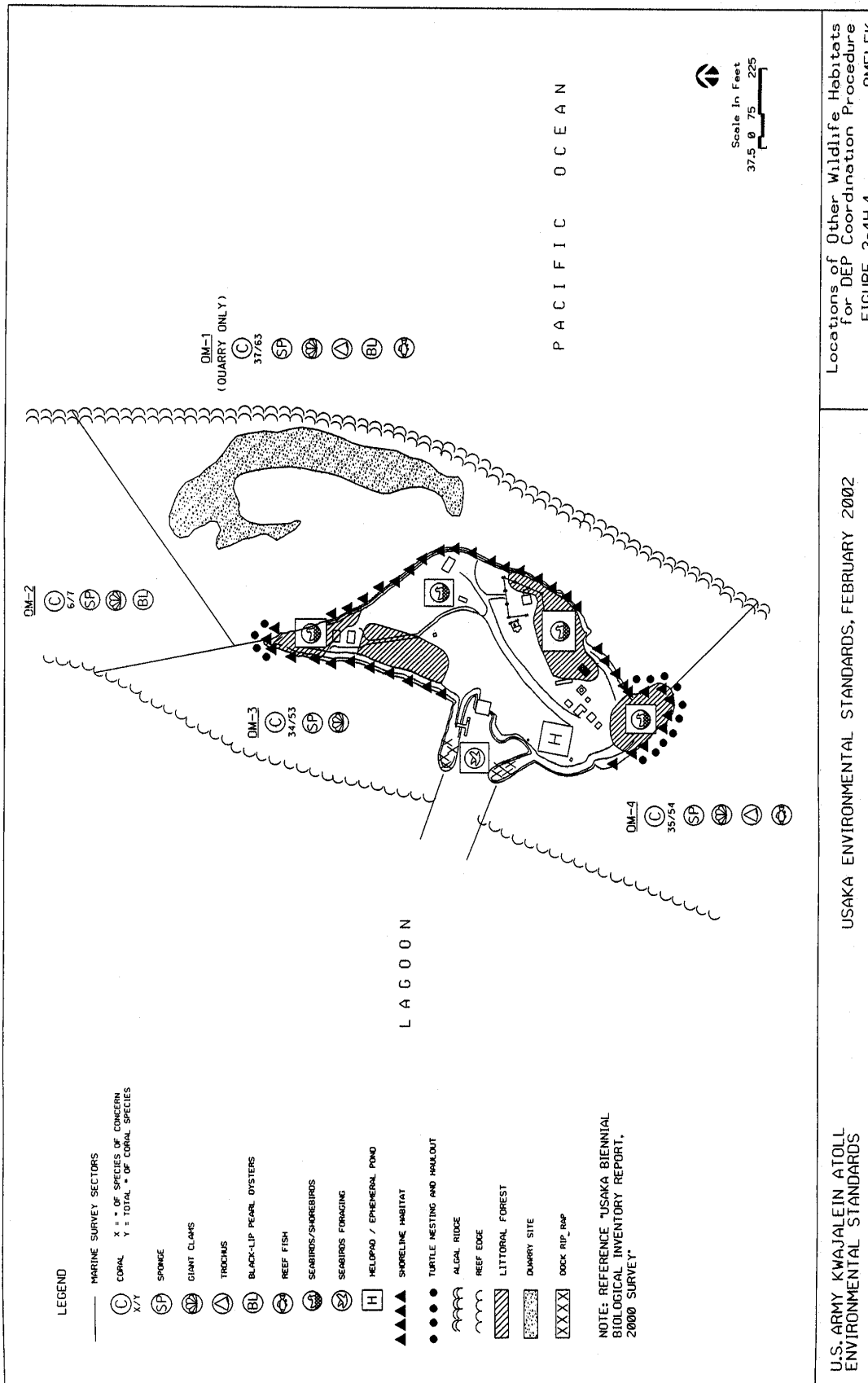
Locations of Other Wildlife Habitats for DEP Coordination Procedure  
FIGURE 3-4H.2  
ROI-NAMUR

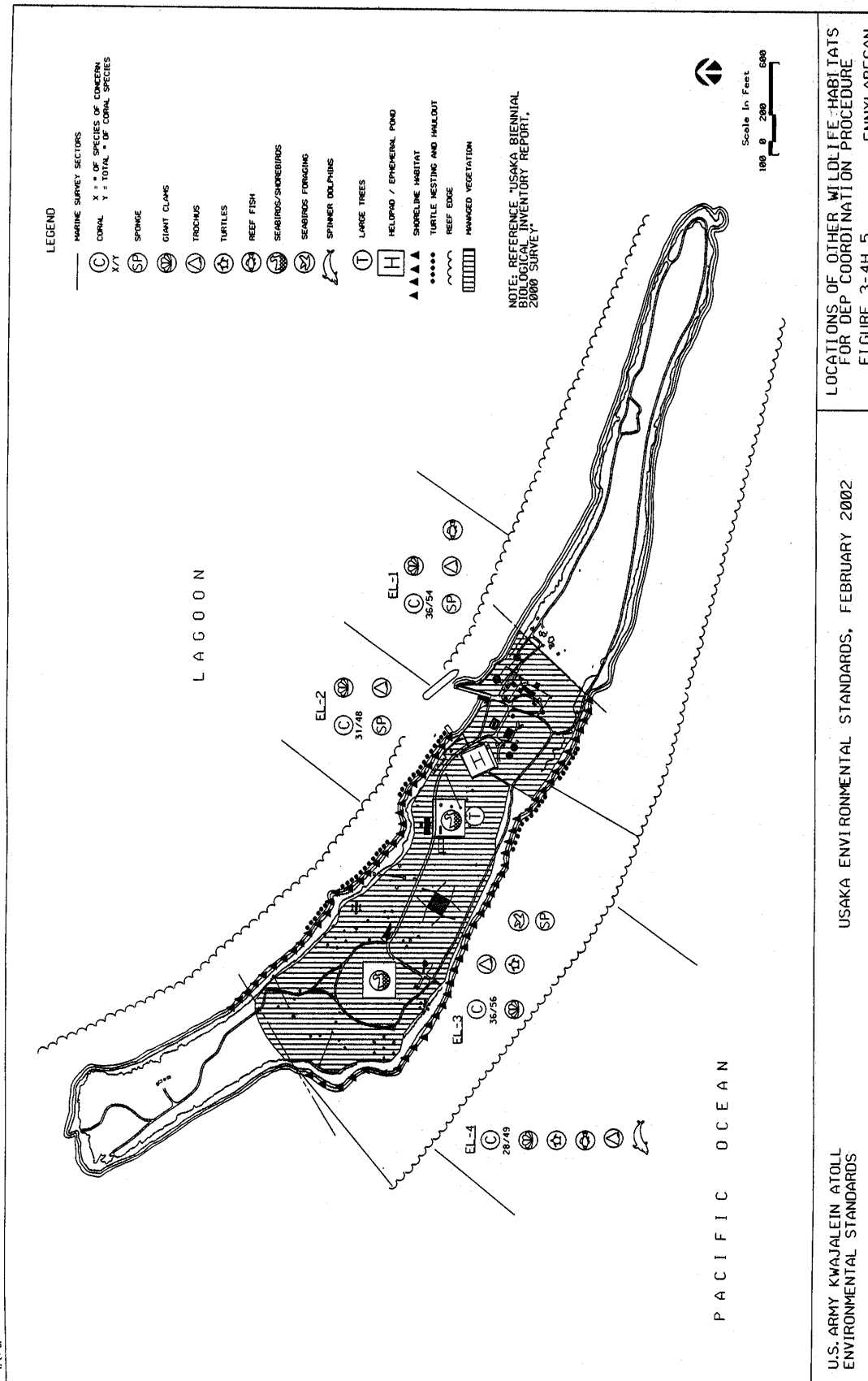
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ENVIRONMENTAL STANDARDS

# LAGOON





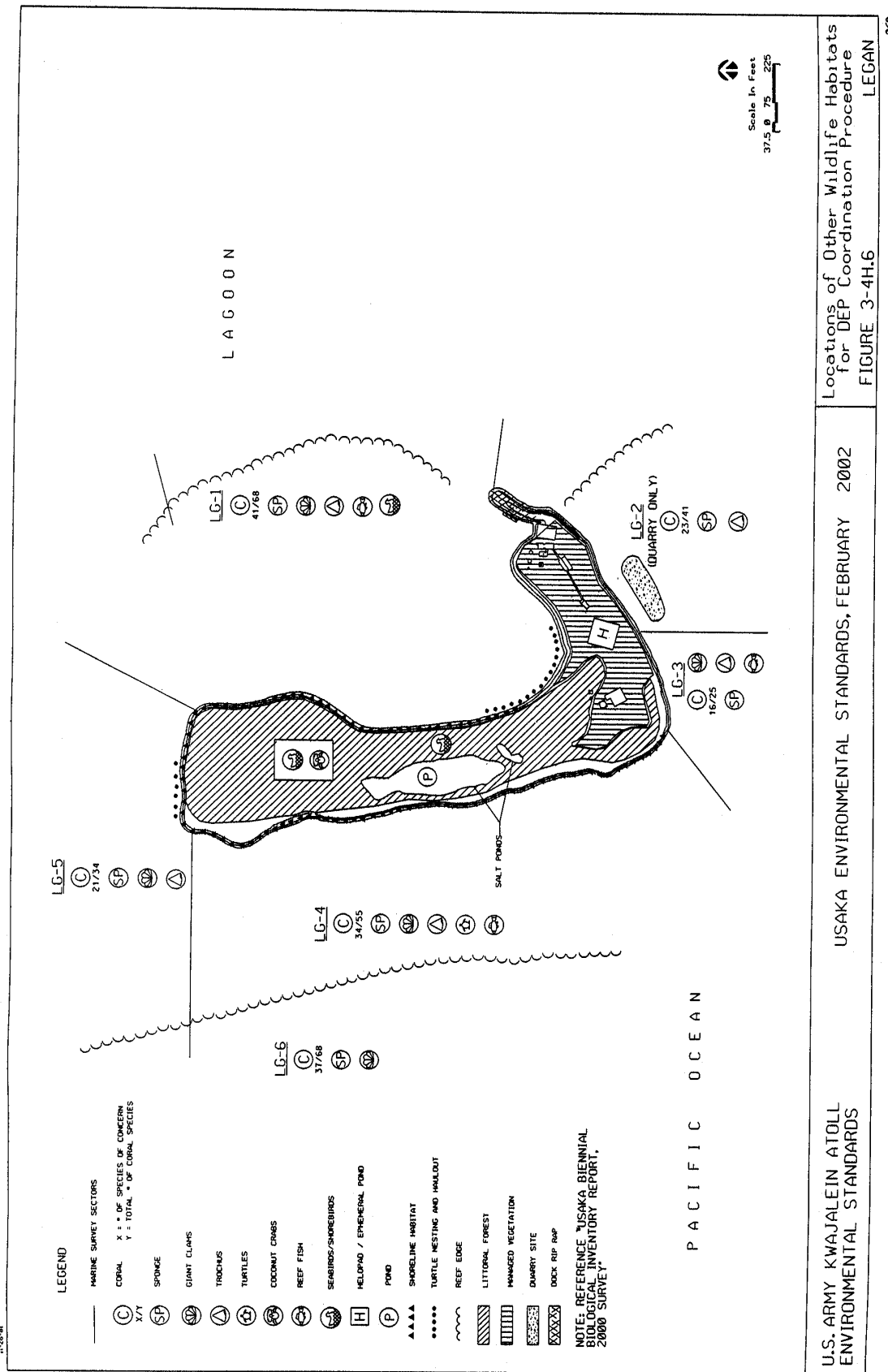


LOCATIONS OF OTHER WILDLIFE HABITATS  
FOR DEP COORDINATION PROCEDURE  
FIGURE 3-4H.5  
ENNYLABEGAN

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ENVIRONMENTAL STANDARDS





Locations of Other Wildlife Habitats  
for DEP Coordination Procedure  
FIGURE 3-4H.6  
LEGAN

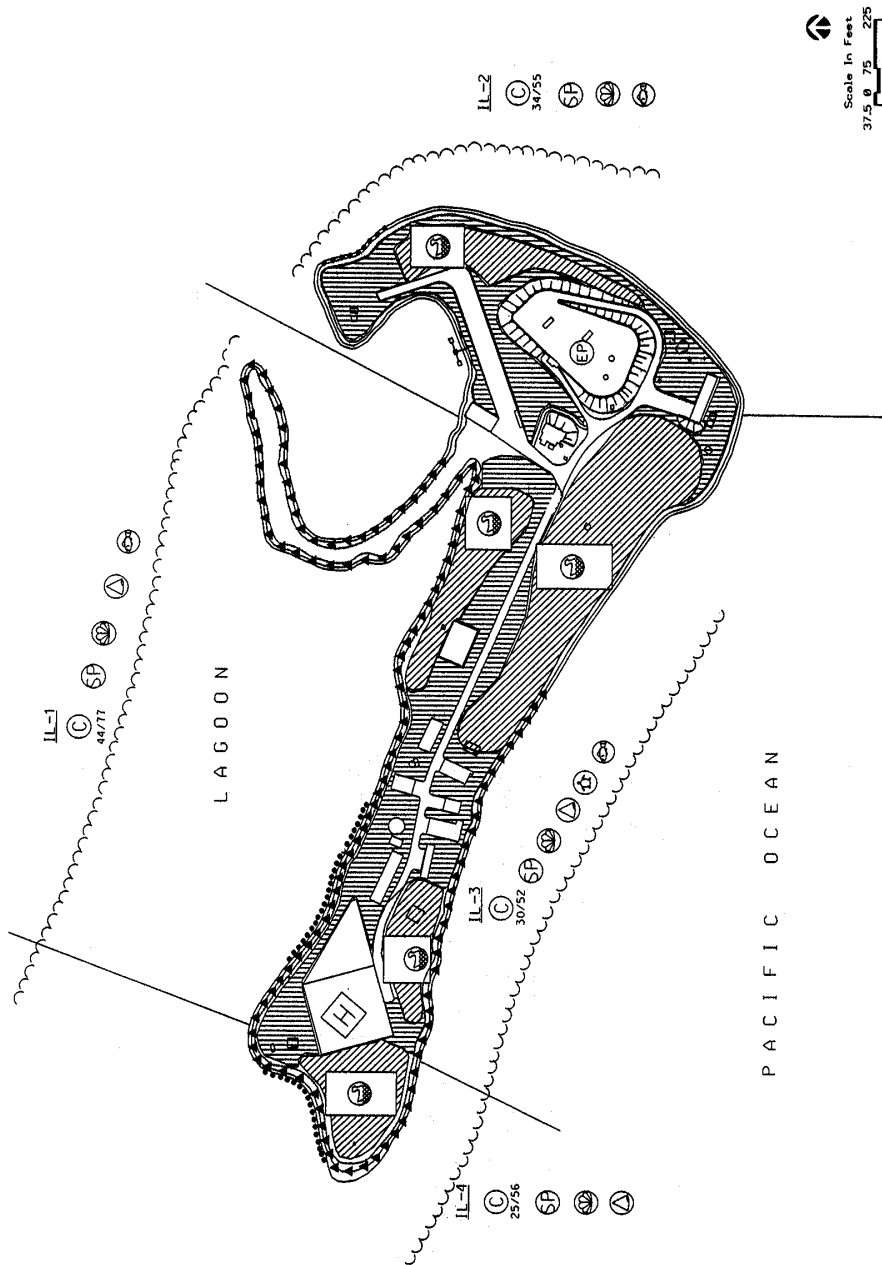
USAKA ENVIRONMENTAL STANDARDS, FEBRUARY 2002

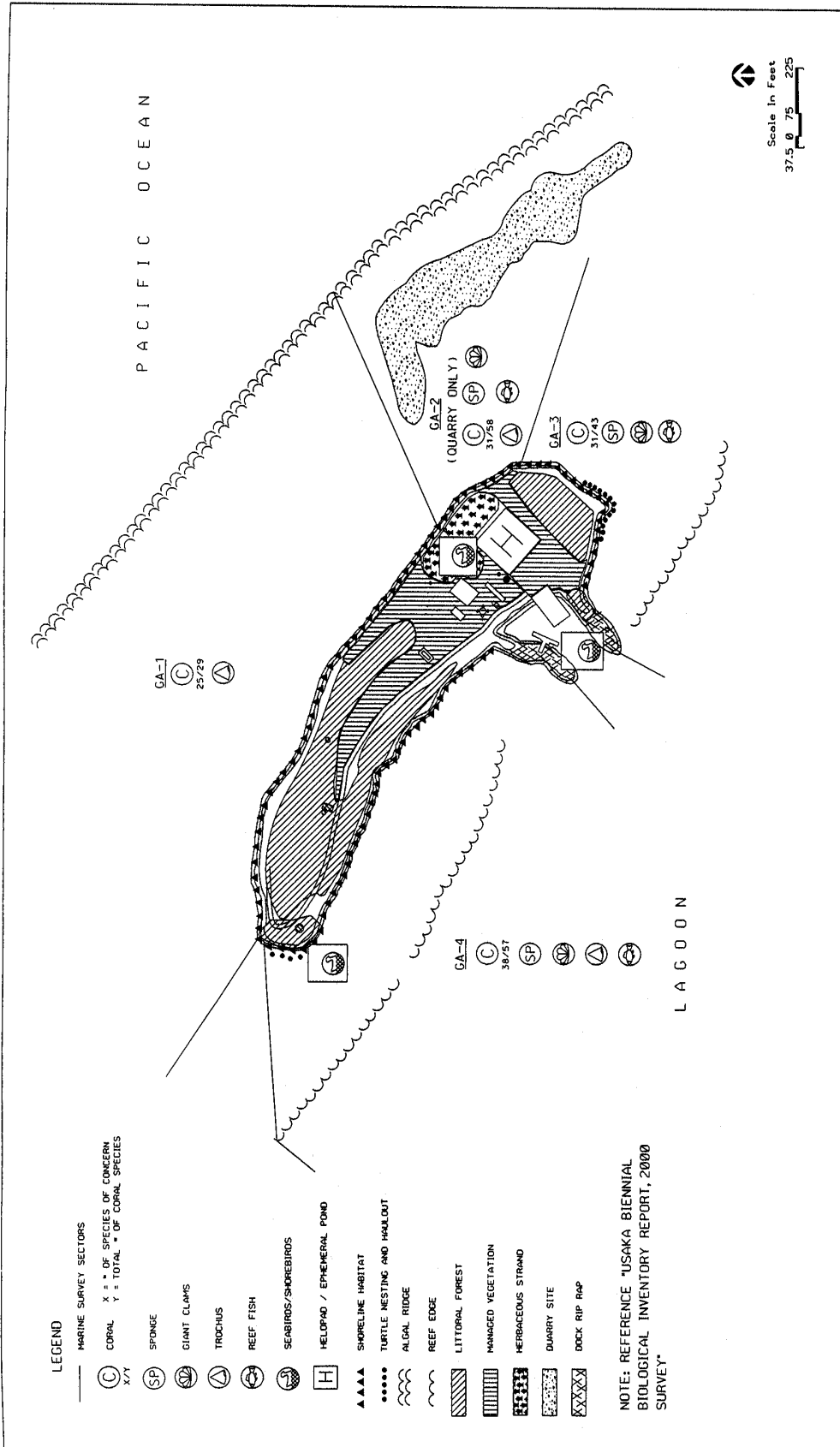
U.S. ARMY KWAJALEIN ATOLL  
ENVIRONMENTAL STANDARDS

LEGEND

- MARINE SURVEY SECTORS
- X = \* OF SPECIES OF CONCERN  
Y = TOTAL \* OF CORAL SPECIES
- (C) CORAL  
X/Y
- (SP) SPONGE
- (GC) GIANT CLAMS
- (TR) TROCHUS
- (TU) TURTLES
- (RF) REEF FISH
- (SB) SEABIRDS/SHOREBIRDS
- (EP) EPHEMERAL POND
- (H) HELIOPAD / EPHEMERAL POND
- ▲▲▲ SHORELINE HABITAT
- \*\*\*\*\* TURTLE NESTING AND HALLOUT
- ~~~~~ REEF EDGE
- ||||| LITTORAL FOREST
- ||||| MANAGED VEGETATION

NOTE: REFERENCE 'USAKA BIENNIAL BIOLOGICAL INVENTORY REPORT, 2000 SURVEY'.





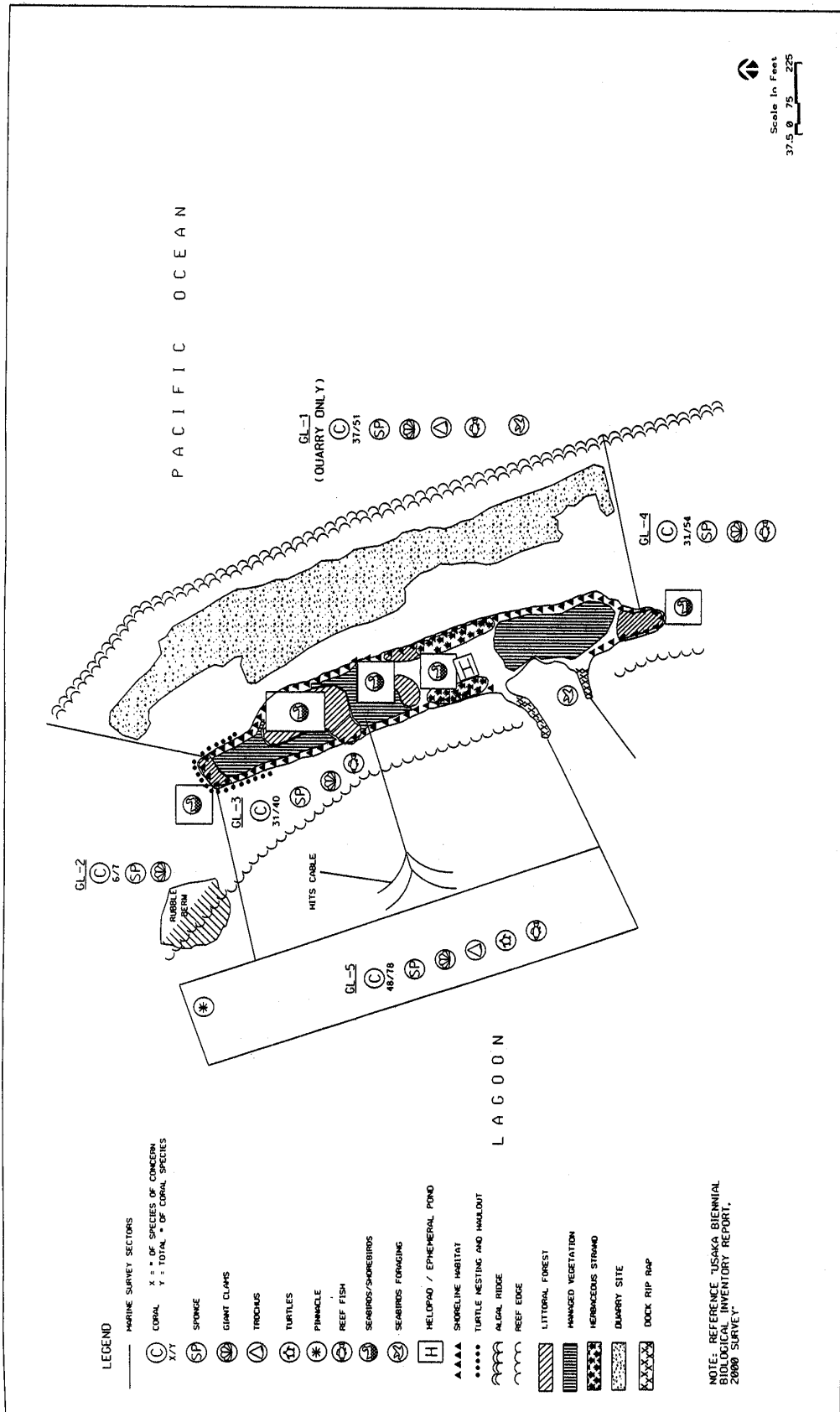
U.S. ARMY KWAJALEIN ATOLL ENVIRONMENTAL STANDARDS

USAKA ENVIRONMENTAL STANDARDS, FEBRUARY 2002

Locations of Other Wildlife Habitats for DEP Coordination Procedure

FIGURE 3-4H.8

GAGAN



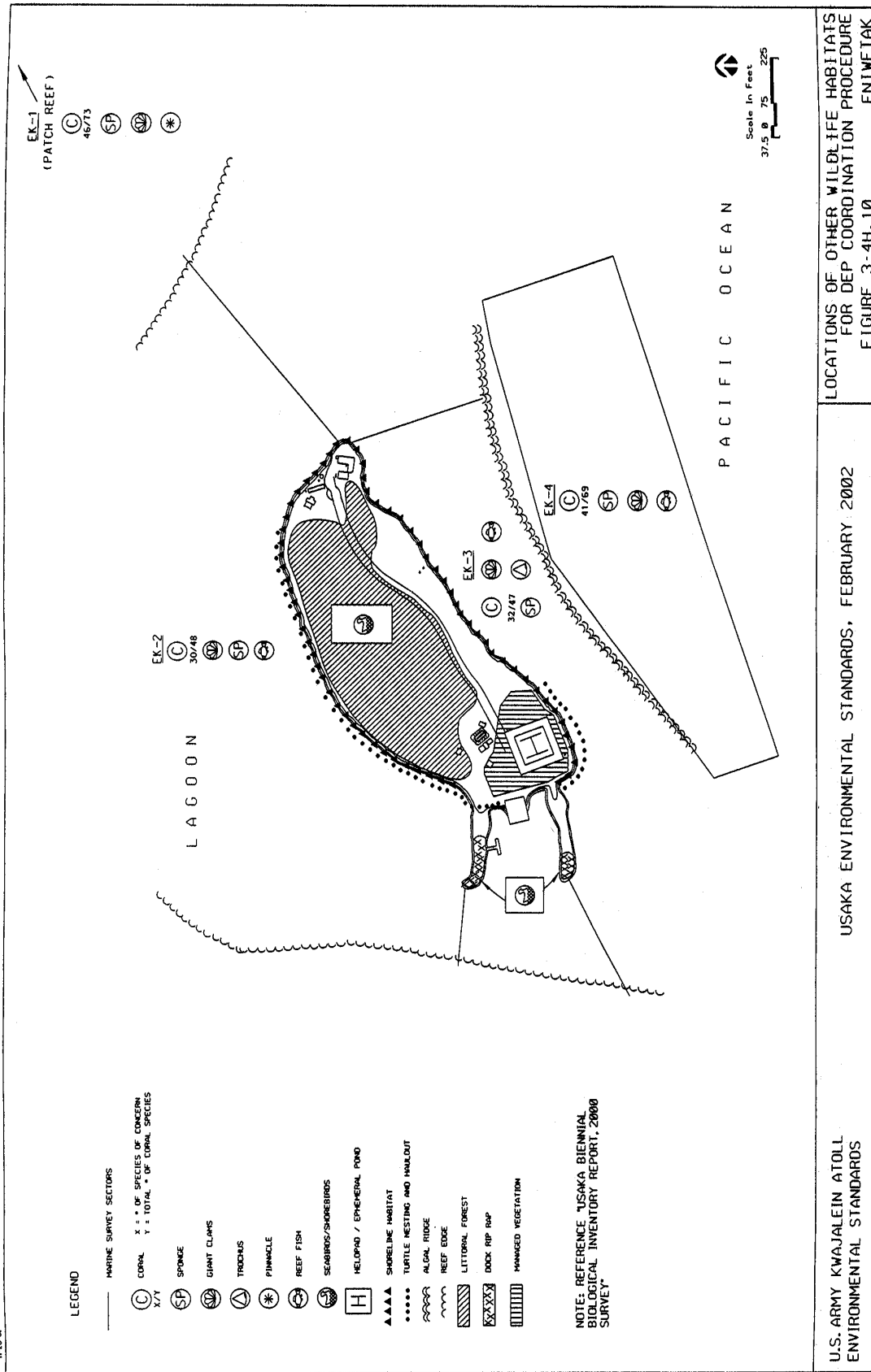
U.S. ARMY KWAJALEIN ATOLL ENVIRONMENTAL STANDARDS

USAKA ENVIRONMENTAL STANDARDS, FEBRUARY 2002

LOCATIONS OF OTHER WILDLIFE HABITATS FOR DEP COORDINATION PROCEDURE

FIGURE 3-4H.9 GELLINAM

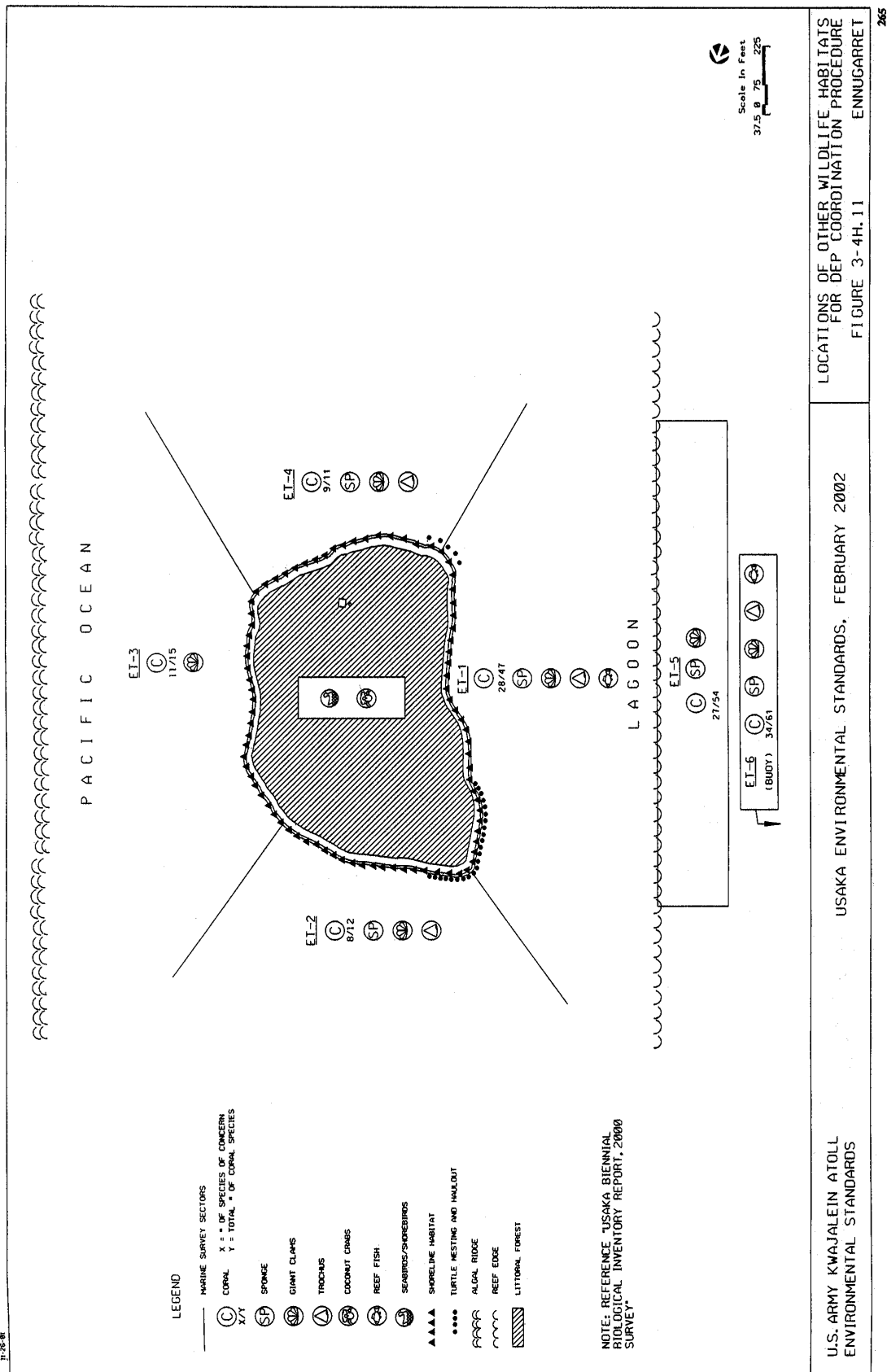
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ENVIRONMENTAL STANDARDS

USAKA ENVIRONMENTAL STANDARDS, FEBRUARY 2002

LOCATIONS OF OTHER WILDLIFE HABITATS  
FOR DEP COORDINATION PROCEDURE  
FIGURE 3-4H.10  
ENIWE TAK



LOCATIONS OF OTHER WILDLIFE HABITATS  
FOR DEP COORDINATION PROCEDURE  
FIGURE 3-4H.11  
ENNUGARREI

USAKA ENVIRONMENTAL STANDARDS, FEBRUARY 2002

U.S. ARMY KWAJALEIN ATOLL  
ENVIRONMENTAL STANDARDS

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## **3-5 OCEAN DISPOSAL**

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##### **3-5.7.2 Specific Prohibited Materials**

#### **3-5.7 SPECIAL REQUIREMENTS**

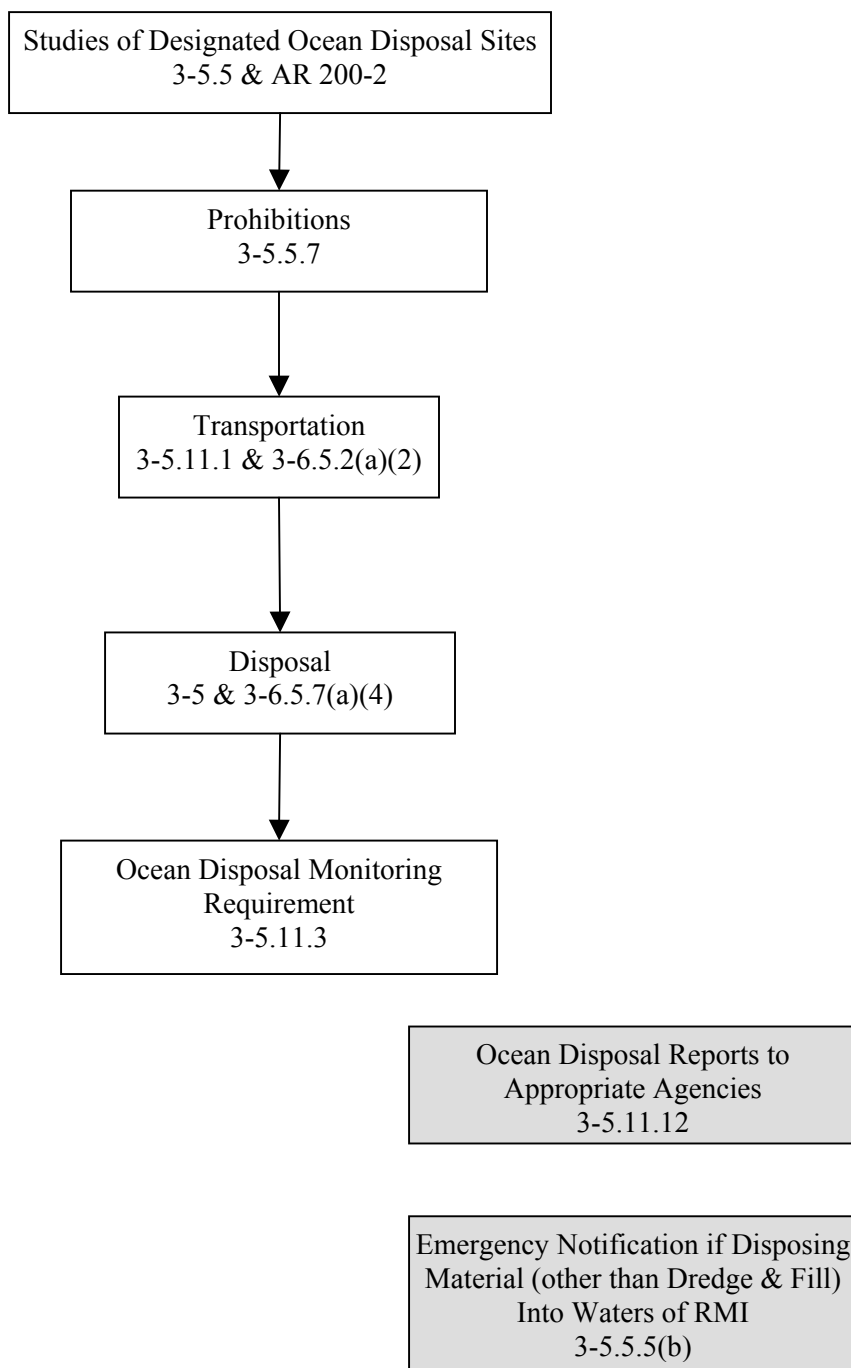
##### **3-5.7.1 Transportation**

##### **3-5.7.2 Records Keeping**

##### **3-5.7.3 Disposal Site Monitoring**



**FIGURE 3-5.1  
OCEAN DISPOSAL**



### **3-5.1 INTRODUCTION**

This section establishes standards applicable to ocean disposal of wastes at USAKA. The standards are designed to protect ocean resources from degradation and to ensure the continued use of those resources for aesthetic, recreational, and economic benefit. The standards for ocean disposal apply to the territorial waters of the RMI, as defined in Section 3-8, and to all USAKA ocean disposal activities initiated at USAKA. In addition to the specific procedural references in this section, the standards for ocean disposal shall incorporate all applicable procedures that are in Part 2.

### **3-5.2 DERIVATION**

Section 3-5 of the Standards is derived primarily from 40 CFR 220 through 233 and 33 CFR 324, which establish regulations for implementing provisions regarding ocean disposal in the Marine Protection, Research and Sanctuaries Act. Additional sections are derived from parts of the CFR for discharge of dredged or fill material or material designated for dredging or excavation or for filling of water and from Section 404 of the Clean Water Act (CWA). Regulations of, and previous agreements with, RMIEPA have been consulted, as have MARPOL, 73/78, and the London Dumping Convention. Also reviewed were the Convention on the Territorial Sea and Contiguous Zone, 1958; the Convention on the Law of the Sea, 1982; and the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, 1990.

### **3-5.3 SUMMARY OF CHANGES**

The ocean disposal standards deviate from 40 CFR 220 through 233 in that they eliminate the parts that address state certification programs, limit ocean disposal to case-by-case authorization, and eliminate categorical types of permits. For individual instances of ocean disposal, Section 3-5 uses performance criteria that are reviewed on a case-by-case basis to determine whether to allow disposal whereas the U.S. statutes and regulations include a separate set of procedures for assessing all proposed designations. The review in the standards is based on a DEP (Section 2-17.3) in which the environmental impact criteria in Appendix 3-5A are considered. The U.S. statutes and regulations require one of four types of permits.

### **3-5.4 PLANS**

(Reserved)

### **3-5.5 PERFORMANCE STANDARDS**

#### **3-5.5.1 Selection and Designation of Disposal Sites**

Selection and designation of sites for ocean disposal shall be accomplished by completion of an EIS in accordance with the requirements of NEPA and a DEP in

[3-5.5.1(a)]

accordance with Section 2-17.3. The sites shall be designated on the basis of environmental studies of each site and of regions adjacent to the site and on the basis of historical knowledge of the effect of waste disposal on areas that are similar to such sites in physical, chemical, and biological characteristics. Studies for the evaluation and potential selection of disposal sites shall be conducted in support of the EIS and DEP.

(a) The following general criteria for selecting disposal sites shall be considered in addition to other pertinent information.

(1) Disposal of materials into the waters of the RMI shall be considered only at sites or in areas selected to minimize the interference of disposal activities with other activities in the marine environment, particularly avoiding areas of existing fisheries and commercial or recreational navigation.

(2) The basis for selecting the locations and boundaries of disposal sites shall be the expectation that temporary changes in water quality or other environmental conditions during the initial mixing caused by disposal operations anywhere within the site can be reduced so that normal ambient seawater levels or undetectable contaminant concentrations or effects can be achieved before sensitive water-use areas are affected.

(3) The size of disposal sites shall be limited so that the sites can be isolated for identifying and controlling immediate adverse effects and for implementing effective monitoring and surveillance programs to detect any long-range effects. The sizes, configurations, and locations of all proposed disposal sites shall be identified in the EIS.

(b) The following specific factors also shall be considered in the EIS for designating disposal sites.

- (1) Location, depth of water, bottom topography, and distance from shoreline.
- (2) Location in relation to breeding, spawning, nursery, feeding, or passage areas of marine life in adult or juvenile phases.
- (3) Location in relation to beaches, other recreational areas, or similar areas.
- (4) Type and quantity of waste to be disposed of and methods of release, including methods of packing the waste, if any.
- (5) Feasibility of surveillance and monitoring.
- (6) Dispersal, horizontal transport, and vertical mixing characteristics of the area, including direction of the prevailing current and velocity.

- (7) Existence and effects of current and previous discharges and disposal in the area (including cumulative effects).
- (8) Interference with shipping, fishing, recreation, desalination, aquaculture, and other legitimate uses of the ocean.
- (9) Existing water quality and ecology of the site as determined by available data and trend assessment or baseline surveys.
- (10) Potential for attracting nuisance species at the disposal site.
- (11) Effects of the disposal or discharge on cultural resources (Section 3-7) in the area.

### **3-5.5.2 Modification of the Use of Disposal Sites**

- (a) Modifications of the use of disposal sites that involve withdrawing designated disposal sites from use or permanent changes in the total specified quantities or types of wastes authorized to be discharged to a specific disposal site shall be accomplished by completing an amendment to the EIS for designating the disposal site(s) and a modification to the DEP designating the disposal site.
- (b) Modifications of the use of disposal sites selected and designated according to Section 3-5.5.1, shall not automatically modify conditions of previously completed DEPs (Section 3-5.5.3) for individual disposal events.
- (c) Modifications of the use of disposal sites shall be evaluated on the basis of monitoring data compiled in compliance with Section 3-5.7.3.

### **3-5.5.3 Case-by-Case Authorization for Ocean Disposal**

- (a) All individual ocean disposal events shall be considered on a case-by-case basis and require a final DEP prior to initiation. NPAs for any such disposal events shall: demonstrate compliance with the criteria in Appendix 3-5A; be based on the EIS for site designation; provide the relevant information required by Section 2-17.3.2; and address the requirements in Sections 3-5.5.3(b) through (d) below.
  - (1) The criteria in Appendix 3-5A are designed to consider the environmental effect of the proposed disposal operation, the need for ocean disposal, alternatives to ocean disposal, and the effect of the proposed action on aesthetic, recreational, and economic values and on other uses of the ocean.
  - (2) A single DEP for an ocean disposal event may allow up to three individual instances of disposal within a 30-day period, providing that the total amount of material is identified by type and weight and that the time periods for disposal operations are specified.

**[3-5.5.3(b)]**

(b) All NPAs for ocean disposal shall include a discussion of whether the ocean disposal would violate standards for water quality as defined in Section 3-2. The discussion shall consider the release zone and initial mixing in making the assessment.

(c) To comply with the standards in Section 3-5, a NPA must document that the material proposed for ocean disposal satisfies the environmental impact criteria in Appendix 3-5A.1 through 3-5A.9. In addition to satisfying the criteria in these appendices, the NPA must demonstrate that:

(1) There is a compelling need for ocean disposal and no practical alternative means of disposal are available, as determined according to the criteria in Appendix 3-5A.10; and

(2) There are no unacceptable adverse effects on aesthetic, recreational, or economic values as determined according to the criteria in Appendix 3-5A.11; and

(3) There are no unacceptable adverse effects on other uses of the ocean as determined according to the criteria in Appendix 3-5A.12.

**3-5.5.4 General Requirements for Authorized Ocean Disposal**

(a) USAKA shall take appropriate measures to remove, to the maximum extent practicable, all materials that may degrade the marine environment or threaten public health and safety and the environment, including, without limit, fuel, petroleum products, refrigerants, batteries, copper, organic compounds, solvents, hydraulic fluids, and all readily detachable material capable of creating debris or contributing to chemical pollution of the environment.

(b) USAKA shall retrieve floating material immediately after each disposal operation.

(c) USAKA shall limit the time of disposal activities to no earlier than one-half hour after sunrise and no later than one-half hour before sunset.

**3-5.5.5 Exclusions**

(a) The following activities are not considered ocean disposal for purposes of Section 3-5.

(1) Routine discharges of effluent incidental to the propulsion of vessels or the operation of motor-driven equipment on vessels.

(2) Construction of any fixed structure or artificial island or the intentional placement of any device in the waters of the RMI or on or in the submerged land beneath such water for a purpose other than disposal when such construction or such placement is otherwise regulated by other sections of these Standards.

(3) Material and debris resulting from routine tests conducted at or near USAKA.

(b) Emergencies: For any emergency disposal episode, USAKA shall notify the Appropriate Agencies and file a timely report on the episode with the Appropriate Agencies.

### **3-5.6 PROHIBITIONS**

#### **3-5.6.1 General**

Except as authorized in accordance with Section 3-5.5, no ocean disposal or dumping of materials shall occur by USAKA in the RMI.

#### **3-5.6.2 Specific Prohibited Materials**

Ocean disposal of the materials described in Appendix 3-5A.1 through 3-5A.9 and ocean disposal of the following materials are expressly prohibited in the waters of the RMI.

- (a) Floatable material, garbage, and domestic trash.
- (b) Waste chemicals, toxic materials (including PCBs and batteries), and other industrial waste.
- (c) Radioactive materials, as defined in Section 3-6.
- (d) Sewage sludge.
- (e) Medical wastes, as defined in Section 3-6.
- (f) Oil of any kind or in any form, as defined in Section 3-6.
- (g) Materials in whatever form (including, without limit, solids, liquids, semiliquids, gases, or organisms) produced or used for radiological, chemical, or biological warfare.
- (h) The materials listed in Appendix 3-6B.
- (i) Wastes from exploded ordnance, as defined in Section 3-6.

### **3-5.7 SPECIAL REQUIREMENTS**

#### **3-5.7.1 Transportation**

(a) Availability for Ocean Disposal

All DEPs for ocean disposal shall be carried on the vessels engaged in disposal and shall be made available upon request to the Appropriate Agencies. In addition to the general requirements in Section 2-17.3, all DEPs for ocean disposal events shall include the following:

- (1) Name of the person engaging in the ocean disposal
  - (2) Means of conveyance and methods and procedures for release of the materials to be disposed of
  - (3) The port through or from which such material will be transported for disposal
  - (4) A description of the relevant physical and chemical properties of the material to be disposed of
  - (5) The quantity of the material to be disposed of, expressed in tons
  - (6) The disposal site
  - (7) The time when the authorized disposal may occur and the date of authorization
  - (8) All special provisions that are deemed necessary for monitoring or surveillance of the transportation or disposal
  - (9) Monitoring for assessing the effect of authorized activities on the marine environment at the disposal site
  - (10) All other terms and conditions determined necessary or appropriate, including, without limit, release procedures and requirements for the continued investigation or development of alternatives to ocean disposal.
- (b) During transportation and loading operations, there shall be no loss of waste to any waterway.

#### **3-5.7.2 Records Keeping**

For ocean disposal or related activities at USAKA, USAKA shall retain complete records of the following information in accordance with Section 2-13.2. The records shall be available for inspection.

- (a) The physical and chemical characteristics of the disposed material.
- (b) The precise times and locations of disposal
- (c) All other information required by the DEP for the ocean disposal event.

### **3-5.7.3 Disposal Site Monitoring**

(a) The monitoring program, as specified in the DEP, may include baseline or trend-assessment surveys, special studies, and analysis and interpretation of data from remote or automatic sampling or sensing devices. The primary purpose of the monitoring program is to evaluate the effect of disposal on the marine environment by referencing the monitoring results to a set of baseline conditions. When disposal sites are being used on a continuing basis, such programs may consist of the following components:

(1) Trend-assessment surveys conducted at intervals frequent enough for assessing the extent and trends of environmental effects. Until survey data are adequate to show that changes in scope or frequency are necessary or desirable, trend-assessment and baseline surveys shall be prepared in accordance with the requirements of 40 CFR 228.13.

(2) Special studies for identifying immediate and short-term effects of disposal operations.



## **APPENDIX 3-5A ENVIRONMENTAL IMPACT CRITERIA FOR OCEAN DISPOSAL**

### **3-5A.1 GENERAL ENVIRONMENTAL CRITERIA**

This appendix establishes specific environmental impact criteria for disposing materials into the waters of the RMI; outlines criteria for evaluating the need for ocean disposal; establishes factors for determining the effect of disposal on aesthetic, recreational, and economic values; and establishes criteria for assessing the effect of proposed disposal on other uses of the ocean. If the applicable prohibitions, limits, and conditions are satisfied, the expectation is that the proposed disposal will not unduly degrade or endanger the marine environment and that the disposal will have:

- (a) No unacceptable adverse effects on human health and no significant damage to the resources of the marine environment.
- (b) No unacceptable adverse effect on the marine ecosystem.
- (c) No unacceptable adverse persistent or permanent effects that are due to the disposal of the particular volumes or concentrations of the materials.
- (d) No unacceptable adverse effects on the ocean for other uses as a result of direct environmental effect.

### **3-5A.2 PROHIBITED MATERIALS**

In addition to the specific prohibitions in Section 3-5.7.2, ocean disposal of the following materials shall not be authorized under any circumstances:

- (a) Materials insufficiently described by the applicant in terms of compositions and properties to allow application of the environmental impact criteria of this appendix.
- (b) Persistent inert synthetic or natural materials that may float or remain in suspension in the ocean in such a way that they may interfere significantly with fishing, navigation, or other legitimate uses of the ocean.

### **3-5A.3 TRACE CONTAMINANTS**

- (a) Subject to the exclusion of paragraph (d) of this section, 3-5A.3, below, the ocean disposal or transportation for disposal of materials containing the following constituents as other than trace contaminants shall not be authorized except in an emergency if there is an imminent threat to public health and safety and there is no feasible solution other than ocean disposal:

- (1) Organohalogen compounds.
  - (2) Mercury and mercury compounds.
  - (3) Cadmium and cadmium compounds.
  - (4) Oil of any kind or in any form, including but not limited to petroleum, oil sludge, oil refuse, crude oil, fuel oil, heavy diesel oil, lubricating oil, hydraulic fluids, and any mixtures containing these oils, that are transported for disposal insofar as these oils are not otherwise regulated under the Standards.
  - (5) Other pollutants listed in Appendix 3-6B.2.
  - (6) Known or suspected carcinogens, mutagens, or teratogens.
- (b) These constituents shall be considered present as trace contaminants only when they are present in materials otherwise acceptable for ocean disposal in such forms and amounts in liquid, suspended-particulate, and solid phases that the disposal of the materials will not cause significant undesirable effects, including the possibility of danger associated with their bioaccumulation in marine organisms.
- (c) The potential for significant undesirable effects that are due to the presence of these constituents shall be determined by applying results of bioassays on liquid, suspended-particulate, and solid phases of wastes according to procedures acceptable to USEPA. Materials shall be deemed environmentally acceptable for ocean disposal only when the following conditions are met.
- (1) The liquid phase does not contain any of these constituents in concentrations that will exceed applicable criteria for water quality after allowing for initial mixing, provided that mercury concentrations in the disposal site after allowing for initial mixing may exceed by not more than 50 percent the average normal ambient concentrations of mercury in ocean water at or near the disposal site that would be present in the absence of disposal.
  - (2) Bioassay results on the suspended-particulate phase of the waste do not indicate the occurrence of significant mortality or significant adverse sublethal effects, including bioaccumulation due to the disposal of wastes containing the constituents listed in Section 3-5A.3(a). The bioassays shall be conducted with appropriate sensitive marine organisms, using procedures approved by USEPA for bioassays of suspended-particulate phases. Procedures approved for bioassays in this section shall require exposing organisms for a sufficient length of time and under appropriate conditions to provide reasonable assurance, based on considering the statistical significance of effects at the 95 percent confidence level, that when the materials are dumped, no significant undesirable

effects will occur because of either chronic toxicity or bioaccumulation of the constituents listed in Section 3-5A.3(a).

(3) Bioassay results on the solid phase of the wastes do not indicate the occurrence of significant mortality or significant adverse sublethal effects that are due to the disposal of wastes containing the constituents listed in Section 3-5A.3(a). The bioassays shall be conducted with appropriate sensitive benthic marine organisms, using procedures approved by USEPA for benthic bioassays. Procedures approved for bioassays in this section will require exposing organisms for a sufficient length of time to provide reasonable assurance, based on considering the statistical significance of effects at the 95 percent confidence level, that when the materials are dumped, no significant undesirable effects will occur because of either chronic toxicity or bioaccumulation of the constituents listed in Section 3-5A.3(a).

(4) For persistent organohalogens not included in the applicable criteria for marine water quality, bioassay results on the liquid phase of the waste show that such compounds are not present in concentrations that are large enough to cause significant undesirable effects because of either chronic toxicity or bioaccumulation in marine organisms after allowance for initial mixing.

(d) The prohibitions and limits of this section shall not apply to the constituents identified in Section 3-5A.3(a) if the applicant can demonstrate that such constituents:

(1) Are present in the material only as chemical compounds or forms (e.g., inert insoluble solid materials) that are not toxic to marine life and do not bioaccumulate in the marine environment upon disposal and thereafter; or

(2) Are present in the material only as chemical compounds or forms that, at the time of disposal and thereafter, will be rapidly made nontoxic to marine life and nonbioaccumulative in the marine environment by chemical or biological degradation in the sea.

(3) Will not make edible marine organisms unpalatable.

(4) Will not endanger public health and safety or the health of domestic animals, fish, shellfish, or wildlife.

#### **3-5A.4 LIMITS ESTABLISHED FOR SPECIFIC WASTES OR WASTE CONSTITUENTS**

Materials containing the following constituents must meet the additional limits specified in this section (3-5A.4) to be deemed acceptable for ocean disposal.

- (a) Liquid waste constituents that are immiscible with, or only slightly soluble in, seawater, such as benzene, xylene, carbon disulfide and toluene, may be dumped only when they are present in the waste in concentrations below their solubility limits in seawater. This provision does not apply to materials that may interact with ocean water to form insoluble materials.
- (b) Radioactive materials other than those prohibited by Section 3-5A.2 must be contained in accordance with the provisions of Section 3-5A.8 to prevent their direct dispersion or dilution in ocean water.
- (c) Wastes containing living organisms may not be dumped if the organisms would endanger public health and safety or the health of domestic animals, fish, shellfish, and wildlife by:
  - (1) Extending the range of biological pests, viruses, pathogenic microorganisms, or other agents capable of infesting, infecting, or extensively and permanently altering the normal populations of organisms.
  - (2) Degrading uninfected areas.
  - (3) Introducing viable species not indigenous to an area.
- (d) For disposing highly acidic or alkaline wastes into the ocean, consideration shall be given to:
  - (1) The effects of all changes in the acidity or the alkalinity of the water at the disposal site.
  - (2) The potential for synergistic effects or for the formation of toxic compounds at or near the disposal site. Allowance may be made for the capability of ocean water to neutralize acid or alkaline wastes, but disposal conditions must be such that the average total alkalinity or total acidity of the ocean water after allowance for initial mixing may be changed on the basis of stoichiometric calculations by no more than 10 percent to neutralize acid or alkaline wastes during all disposal operations at a site.
- (e) Wastes containing biodegradable constituents or constituents that consume oxygen in any fashion may be dumped in the ocean only under conditions in which the dissolved oxygen, after allowing for initial mixing, as referenced in Section 3-2.7.1(e)(4), will not be depressed by more than 25 percent below the normally anticipated ambient conditions in the disposal area at the time of the disposal.

### **3-5A.5 LIMITS ON DISPOSAL RATES OF TOXIC WASTES**

No wastes shall be deemed acceptable for ocean disposal unless the wastes can be dumped in a way that does not cause the limits on concentrations defined in Sections 3-5A.3 and 3-5A.4 to be exceeded, provided that those sections do not apply to the wastes for which specific criteria are established in Sections 3-5A.7 and 3-5A.8. Total cumulative quantities of wastes dumped at a site may be limited as described in Section 3-5A.6.

### **3-5A.6 LIMITS ON QUANTITIES OF WASTE MATERIALS**

Substances that may damage the ocean environment because of the quantities in which they are dumped or that may seriously reduce recreational uses may be dumped only when the quantities to be dumped are controlled to prevent long-term damage to the environment or to aesthetic qualities.

### **3-5A.7 HAZARDS TO FISHING, NAVIGATION, SHORELINES, AND BEACHES**

- (a) Wastes that may present a serious obstacle to fishing or navigation may be dumped only at disposal sites and only under conditions that will ensure that there will be no unacceptable interference with fishing or navigation.
- (b) Wastes that may present a hazard to shorelines or beaches may be dumped only at sites and only under conditions that will ensure that there will be no unacceptable danger to shorelines or beaches.

### **3-5A.8 WASTES IN CONTAINERS**

- (a) Wastes placed in containers that are used solely for transport to the disposal site and that are expected to rupture or leak on impact or shortly thereafter must meet the appropriate requirements of Sections 3-5A.3 through 3-5A.7 of this appendix.
- (b) Other wastes in containers shall be approved for disposal only under the following conditions:
  - (1) The materials to be disposed of decay, decompose, or radiodecay to environmentally innocuous materials within the life expectancy of the containers or their inert matrix.
  - (2) The materials to be dumped are present in such quantities and are of such a nature that only short-term, localized adverse effects will occur if the containers rupture at any time.

(3) The containers are dumped at depths and locations where they will cause no threat to navigation, fishing, shorelines, or beaches.

### **3-5A.9 INSOLUBLE WASTES**

(a) Solid wastes consisting of inert natural minerals or materials compatible with the ocean environment may be approved for ocean disposal if they are insoluble above the applicable trace or limiting permissible concentrations and are rapidly and completely settleable and if they are of a particle size and density that they would be deposited or rapidly dispersed without damage to benthic, demersal, or pelagic biota.

(b) Persistent inert synthetic or natural materials that may float or remain in suspension in the ocean as prohibited in Section 3-5A.2 of this appendix may be dumped in the ocean only when they have been processed in such a way that they will sink to the bottom and remain in place.

### **3-5A.10 CRITERIA FOR EVALUATING NEED FOR OCEAN DISPOSAL AND ALTERNATIVES TO OCEAN DISPOSAL**

This section discusses the basis for evaluating the need for ocean disposal and the alternatives to ocean disposal. The two issues shall be evaluated, if applicable, for each DEP submitted for proposed ocean disposal. Reviewing authorities shall use the information in this appendix to determine whether the NPA (Section 2-17.3.2) and the subsequent DEP (Section 2-17.3) contain sufficient information on which to make an informed decision. Review agencies shall consider DEPs for ocean disposal on a case-by-case basis, using the guidelines specified in Section 3-5A.10 of this appendix.

(a) Factors Considered. The need for disposal shall be determined by evaluating the following factors:

(1) Degree of treatment that is useful and feasible for the waste to be dumped and whether the waste material has been or will be treated to that degree before being dumped.

(2) Raw materials and manufacturing or other processes resulting in the waste, whether these materials or processes are essential to the applicant's furnishing of goods or services, or whether other less-polluting materials or processes could be used.

(3) The relative environmental risks, effects, and costs of ocean disposal in comparison to other feasible alternatives, including but not limited to:

(i) Landfilling.

(ii) Removal from USAKA for disposal within the United States.

**[App 3-5A]**

- (iii) Incineration.
  - (iv) Recycling of material for reuse.
  - (v) Additional biological, chemical, or physical treatment of intermediate or final waste streams.
  - (vi) Storage.
- (4) Irreversible or irretrievable consequences of using alternatives to ocean disposal.
- (b) Basis for Determining Need for Ocean Disposal. The need for ocean disposal shall be considered demonstrated when the factors listed in Section 3-5A.10(a) have been thoroughly evaluated and a determination has been made that the following conditions exist where applicable.
- (1) No practicable improvements can be made in process technology or in overall waste treatment to reduce the adverse effects of the waste on the total environment.
  - (2) No practicable alternative locations and methods of disposal or recycling are available including, without limits, storage until treatment facilities are completed that have fewer adverse environmental effects on, or lower potential risk to, other parts of the environment than ocean disposal.
- (c) For the purposes of Section 3-5A.10(b) of this appendix, waste treatment or improvement of processes and alternative methods of disposal are practicable when they are available at reasonable incremental cost and expenditure of energy. The treatments, process improvements, or methods need not be competitive with the costs of ocean disposal, taking into account the environmental benefits derived from such activity, including the relative adverse environmental effects of using alternatives to ocean disposal.

**3-5A.11 EFFECT OF DISPOSAL ON AESTHETIC, RECREATIONAL, AND ECONOMIC VALUES**

- (a) Factors Considered. The assessment of the potential for effects on aesthetic, recreational, and economic values shall be based on an evaluation of the appropriate characteristics of the material to be dumped, allowing for conservative rates of dilution, dispersion, and biochemical degradation during movement of the materials from a disposal site to an area of significant recreational or commercial value. The following specific factors shall be considered in making such an assessment.
- (1) Nature and extent of present and potential recreational and commercial use of areas that might be affected by the proposed disposal.

(2) Existing water quality and nature and extent of disposal activities in the areas that might be affected by the proposed disposal.

(3) Applicable standards for water quality.

(4) Visible characteristics of the materials (e.g., color, suspended particulates) that result in an unacceptable aesthetic nuisance in recreational areas.

(5) Presence in the material of pathogenic organisms that may cause a hazard to public health and safety either directly or through contamination of fisheries or shellfisheries.

(6) Presence in the material of toxic chemical constituents released in volumes that may affect humans directly.

(7) Presence in the material of chemical constituents that may be bioaccumulated or persistent and that may have an adverse effect on humans directly or through food-chain interactions.

(8) Presence in the material of constituents that might significantly affect marine life or recreational or commercial value.

(b) Basis for Determination

(1) The following factors shall be taken into account in evaluating the effect of ocean disposal on aesthetic, recreational, and economic values:

(i) Potential for affecting the recreational use and values of ocean water, inshore water, beaches, or shorelines.

(ii) Potential for affecting the recreational and commercial values of marine life.

(2) Full consideration also shall be given to such nonquantifiable aspects of aesthetic, recreational, and economic effects as:

(i) Public concern for the consequences of the proposed disposal.

(ii) Consequences of not authorizing the disposal, including without limits, the effect on aesthetic, recreational, and economic values for the municipalities and industries involved.

(c) Assessment of Effect. An overall assessment shall be made of the proposed disposal and the possible alternative methods for disposal or recycling on the basis of the effect on aesthetic, recreational, and economic values according to the factors presented



in this appendix, including, where applicable, enhancement of these values. The results of the assessment shall be expressed quantitatively where possible.

### **3-5A.12 EFFECT OF PROPOSED DISPOSAL ON OTHER USES OF THE OCEAN**

(a) Basis for Determination.

(1) On the basis of the state of the art, the possible long-range effects of even the most innocuous substances when they are dumped in the ocean on a continuing basis shall be considered. Such consideration shall be given in evaluating the relationship of each proposed disposal activity to its potential for long-range effects on other uses of the ocean.

(2) Each proposed disposal of material shall be evaluated individually for the potential effects on using the ocean for other than material disposal. The factors to be considered in the evaluation include those stated in Section 3-5A.11 of this appendix, but the evaluation in Section 3-5A.12 shall be based on the effect of the proposed disposal on specific uses of the ocean rather than on overall aesthetic, recreational, and economic values.

(b) Uses Considered. An assessment shall be made of the nature and extent of the existing and potential uses of the disposal site itself and of the areas that might reasonably be expected to be affected by the proposed disposal. Where feasible, a quantitative and qualitative evaluation shall be made of the effect of the proposed disposal on each use. The uses considered shall include but shall not be limited to:

- (1) Commercial fishing in coastal and open ocean areas.
- (2) Recreational fishing in coastal and open ocean areas.
- (3) Recreational use of shorelines.
- (4) Commercial navigation.
- (5) Recreational navigation.
- (6) Actual or anticipated exploitation of living marine resources.
- (7) Actual or anticipated exploitation of nonliving resources, including without limits, sand and gravel areas, mineral deposits, oil and gas exploration and development, and offshore marine-terminal or other structural development.
- (8) Scientific research and study

(c) Assessment of Effects. The assessment of effects on other uses of the ocean shall consider both temporary and long-range effects. Particular emphasis shall be placed on irreversible or irretrievable commitments of resources that would result from the proposed disposal.

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## **3-6 MATERIAL AND WASTE MANAGEMENT**

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### **3-6.1 INTRODUCTION**

This section establishes the standards that are applicable to activities of the U.S. Government at USAKA involving hazardous materials, hazardous wastes, and solid wastes. The standards are modeled after U.S. statutes and regulations to establish protection of public health and safety and the environment. In addition to the specific procedural references in this section, the standards for material and waste management shall incorporate all applicable procedures that are in Part 2. The health-based standards in this section that are subject to the provisions of Section 2-22 are in Appendix 3-6B.

#### **3-6.1.1 Objective of Standards and Goal of Management Strategy**

The objective of the standards for material and waste management is to identify, classify, and manage in an environmentally responsible way all materials imported or introduced for use at USAKA. The goal of the management strategy is to prevent pollution by minimizing the procurement, use, storage, and transport of all substances that might endanger the environment and the health and safety of the population at USAKA.

#### **3-6.1.2 Material Management**

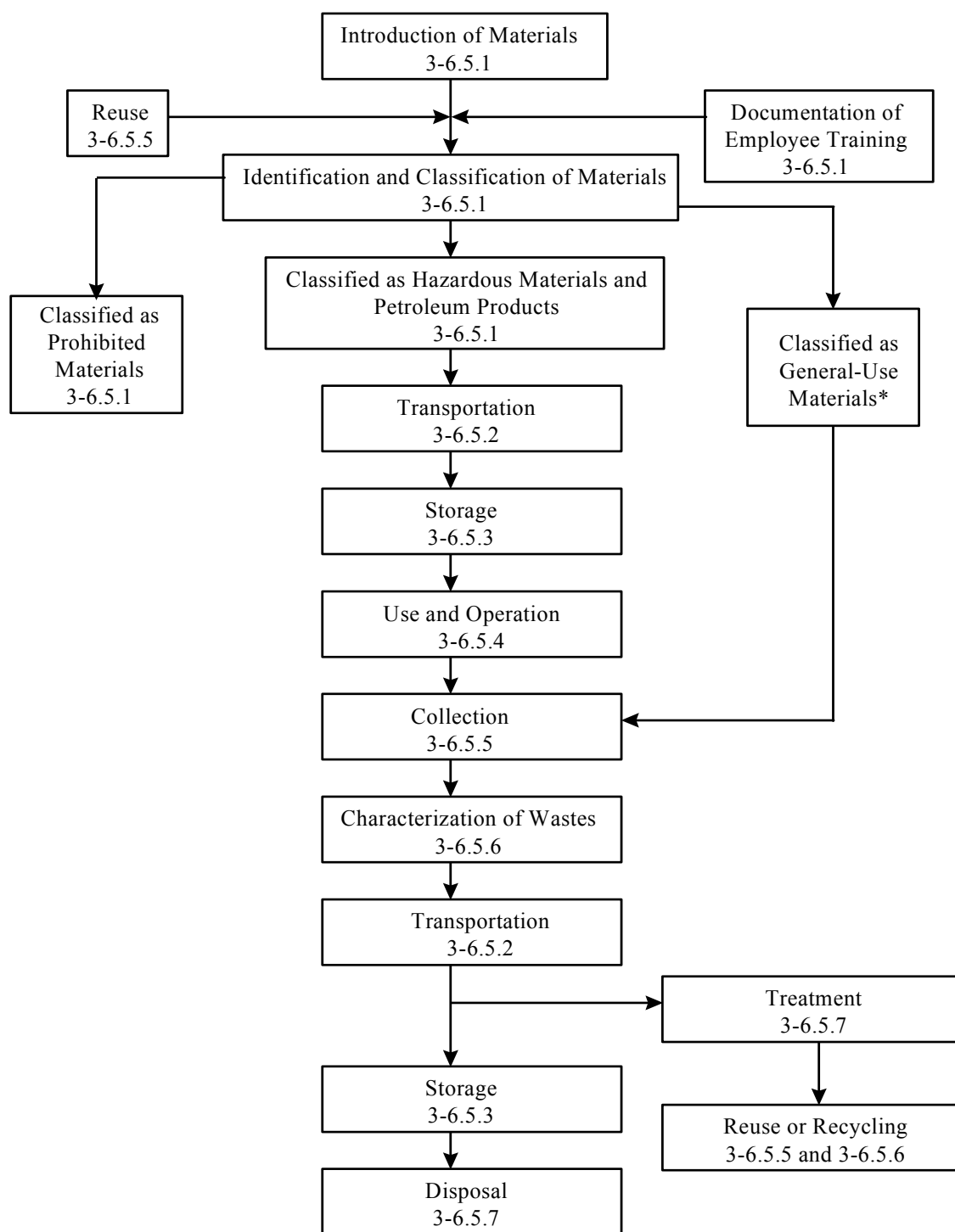
This section, 3-6.1.2, summarizes (and displays in Figure 3-6.1.2 through 3-6.1.11) the overall management strategy that is in the standards for material and waste management.

##### **(a) Purpose**

Each material imported or purchased for use on USAKA that has a potential to affect the environment adversely shall be scrutinized to ensure that proper consideration is given in procuring all potentially toxic or hazardous materials for, and in importing them to, USAKA to:

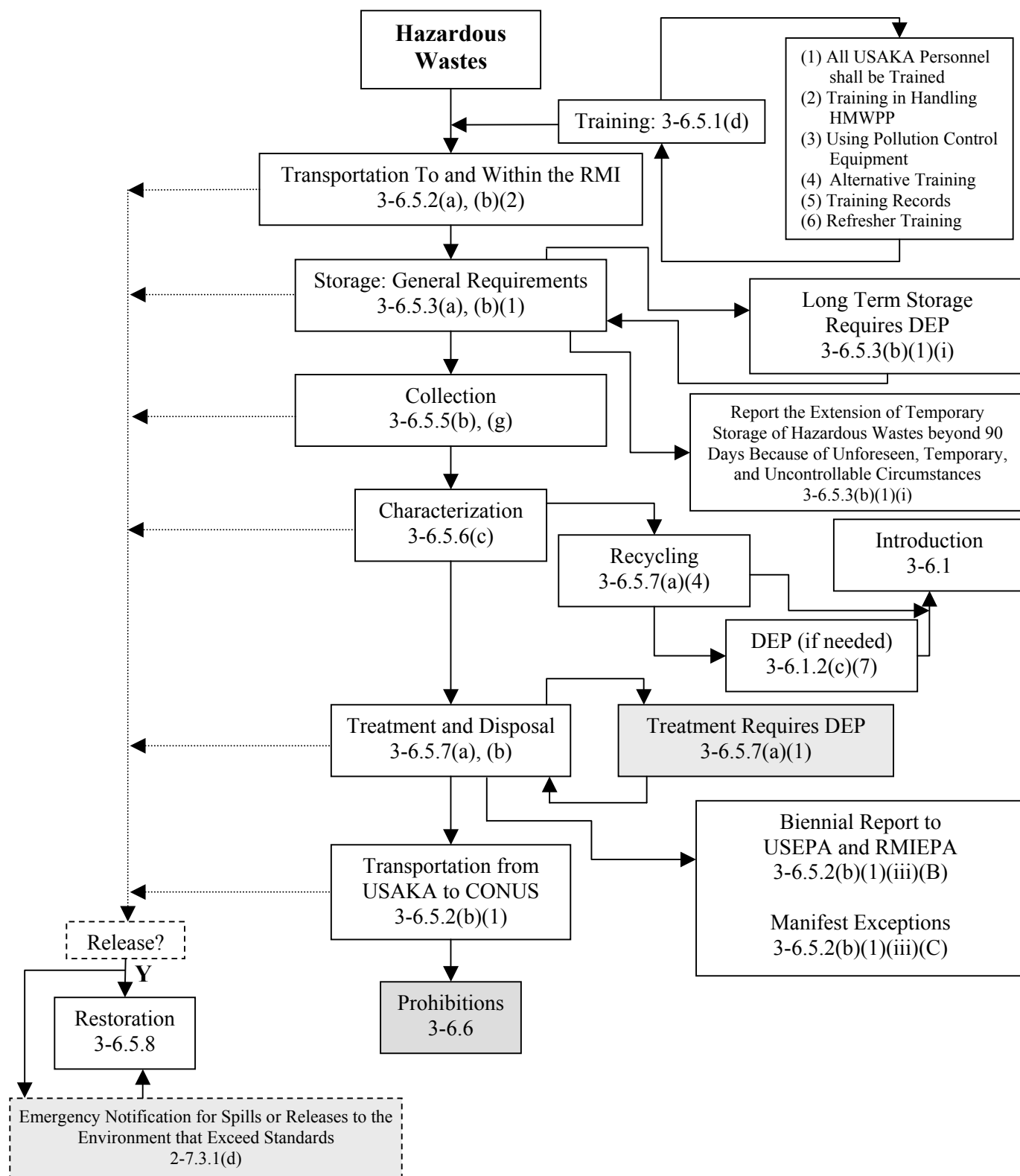
- (1) Minimize hazardous substances used in operating facilities at USAKA.
- (2) Minimize generation of hazardous wastes.
- (3) Establish an import-export record for use in preparing and implementing contingency plans for purchasing, using, collecting, transporting, storing, and disposing of the material.

**FIGURE 3-6.1.2**  
**USAKA MATERIAL-MANAGEMENT STRATEGY**

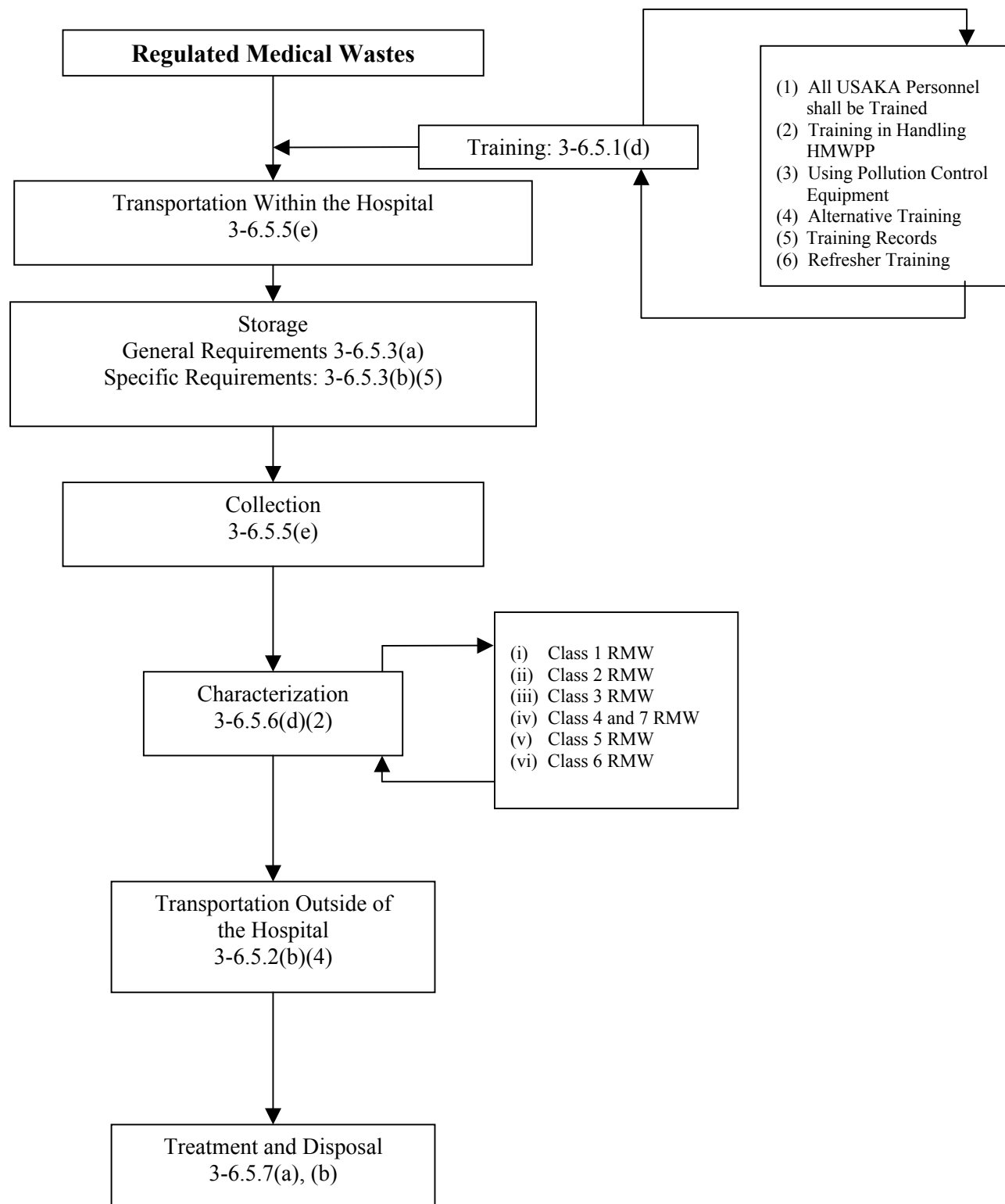


\*General-use materials are not regulated by Section 3-6. All other elements of the material-management strategy are regulated by the standards in Section 3-6.

**FIGURE 3-6.1.3  
HAZARDOUS WASTE MANAGEMENT**

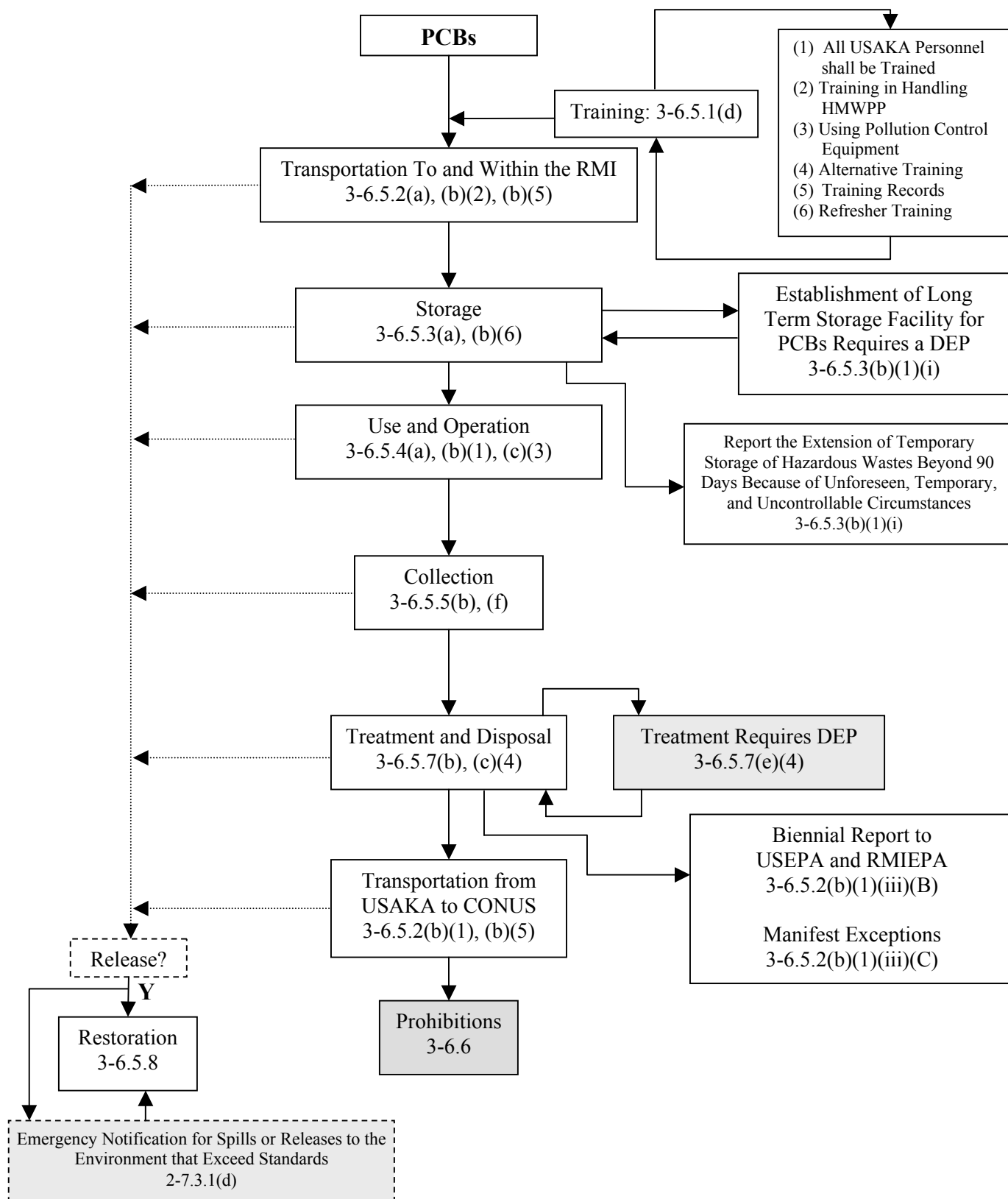


**FIGURE 3-6.1.4  
REGULATED MEDICAL WASTE MANAGEMENT**

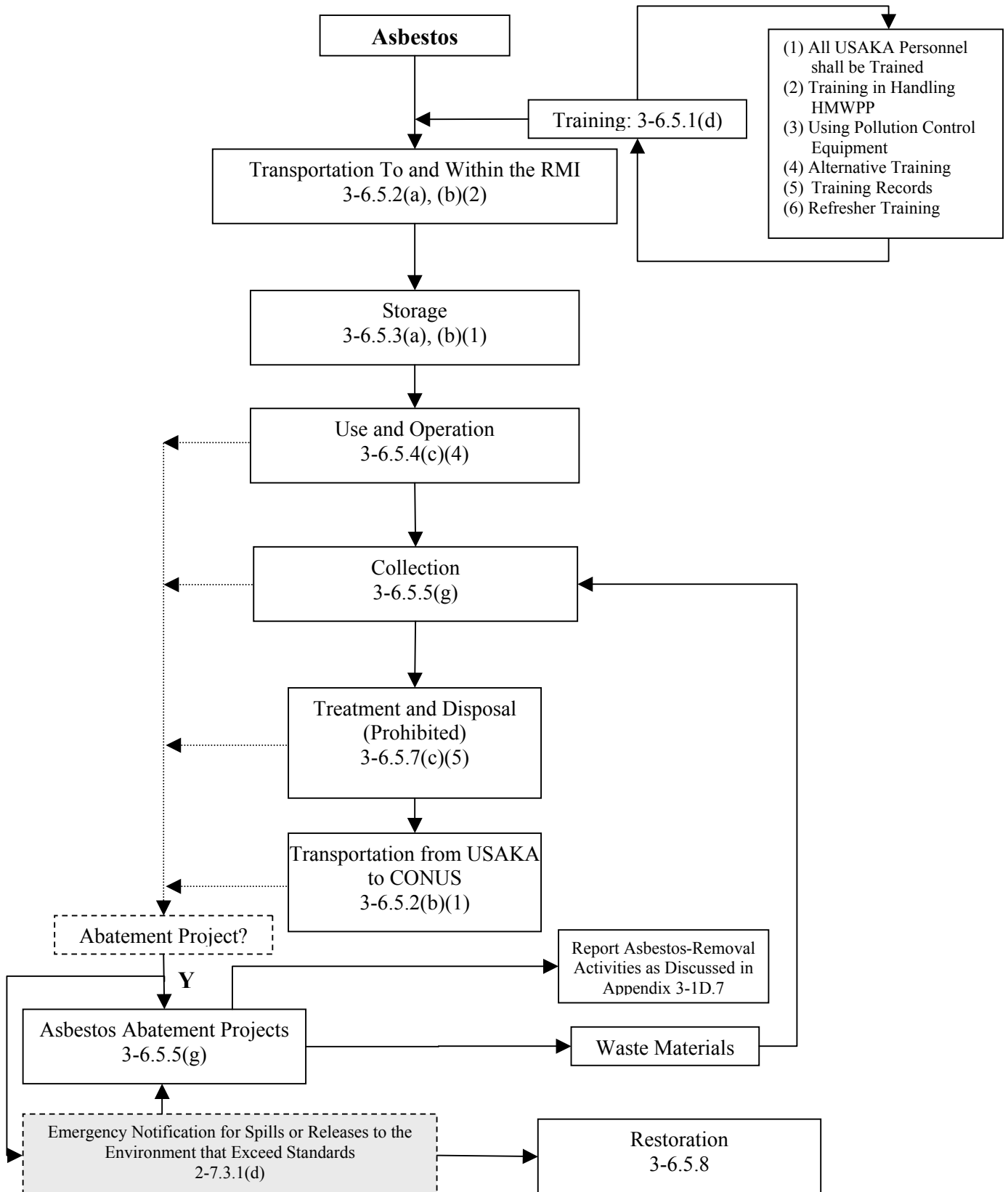




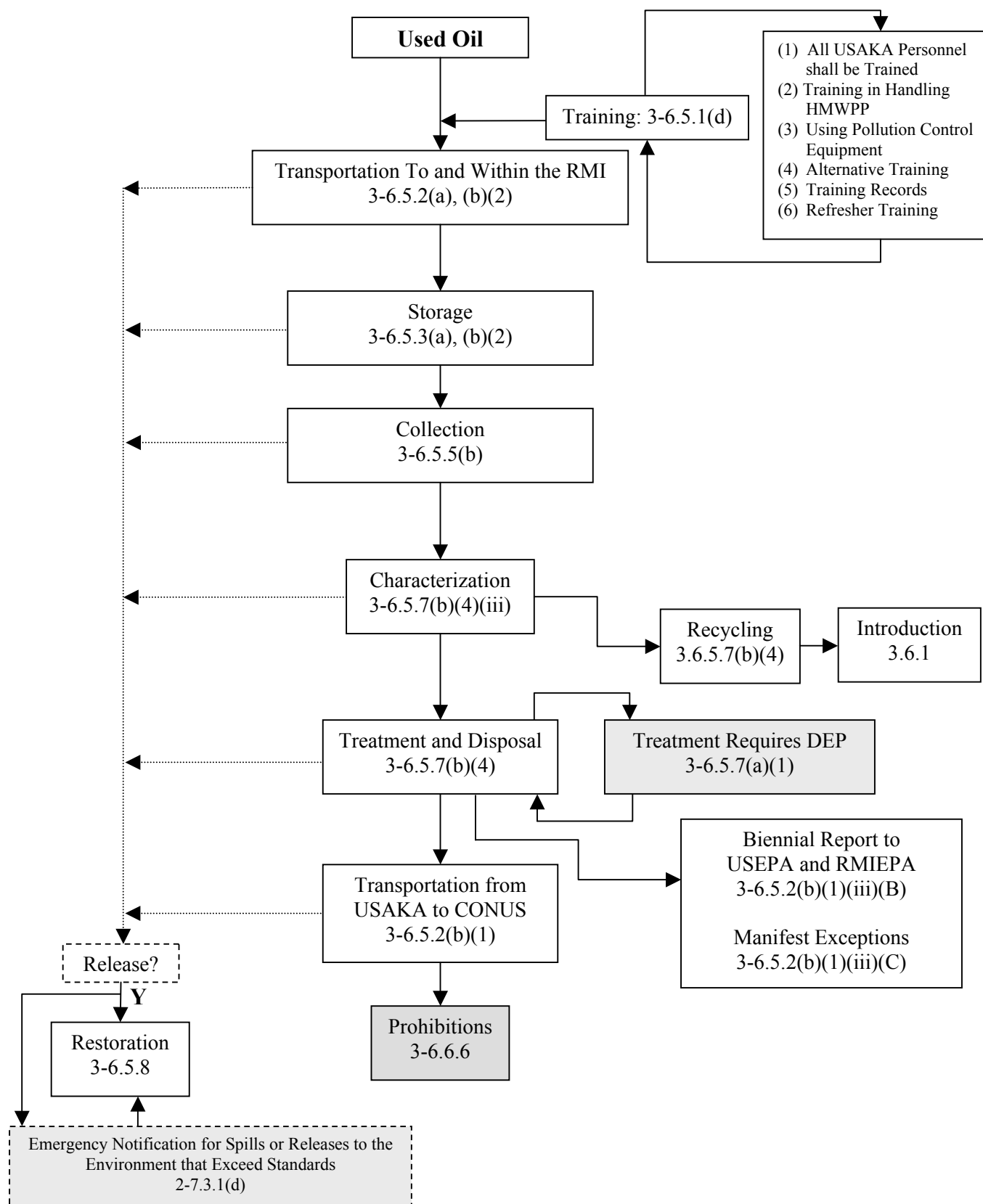
**FIGURE 3-6.1.5  
PCB MANAGEMENT**



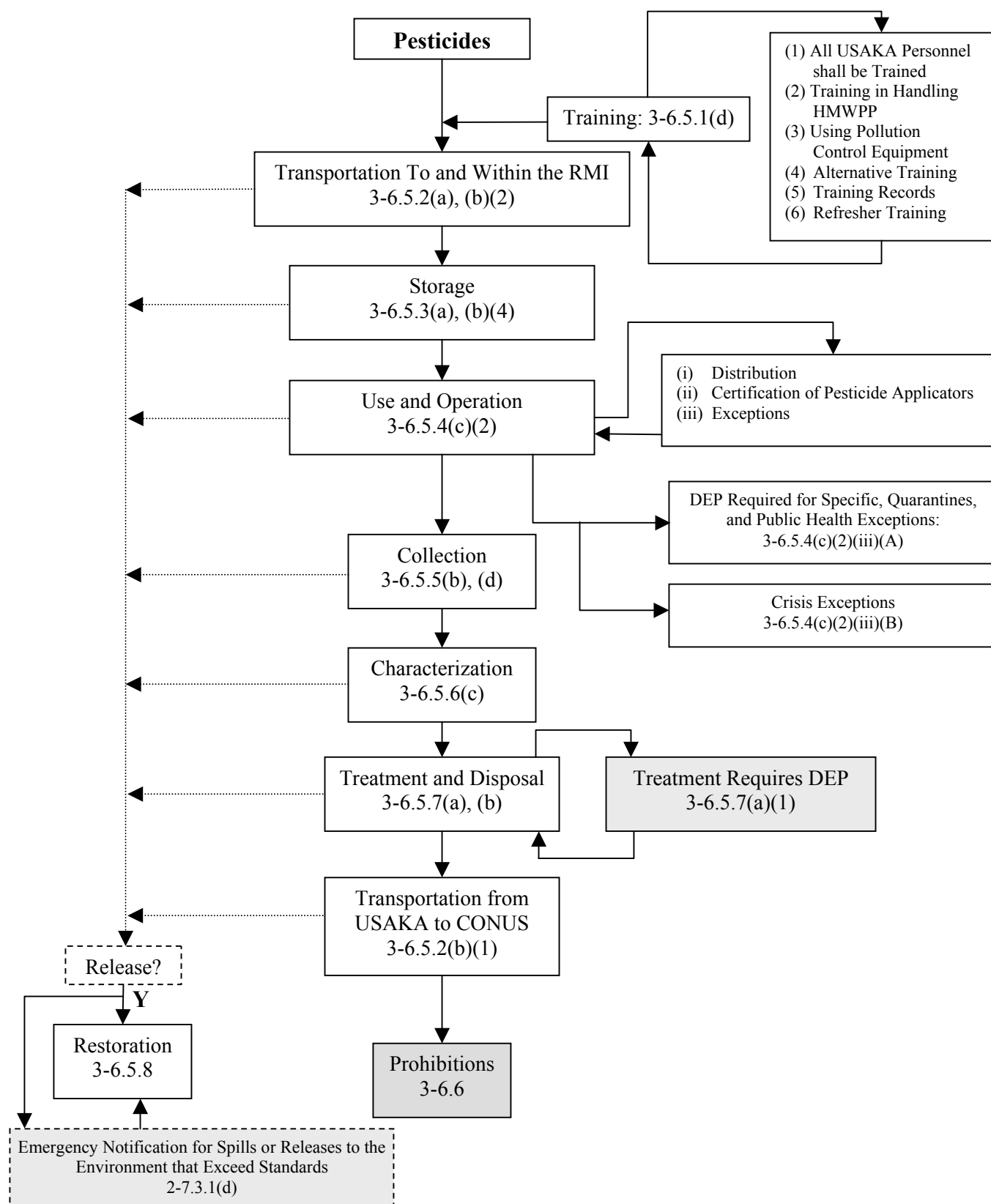
**FIGURE 3-6.1.6  
ASBESTOS MANAGEMENT**



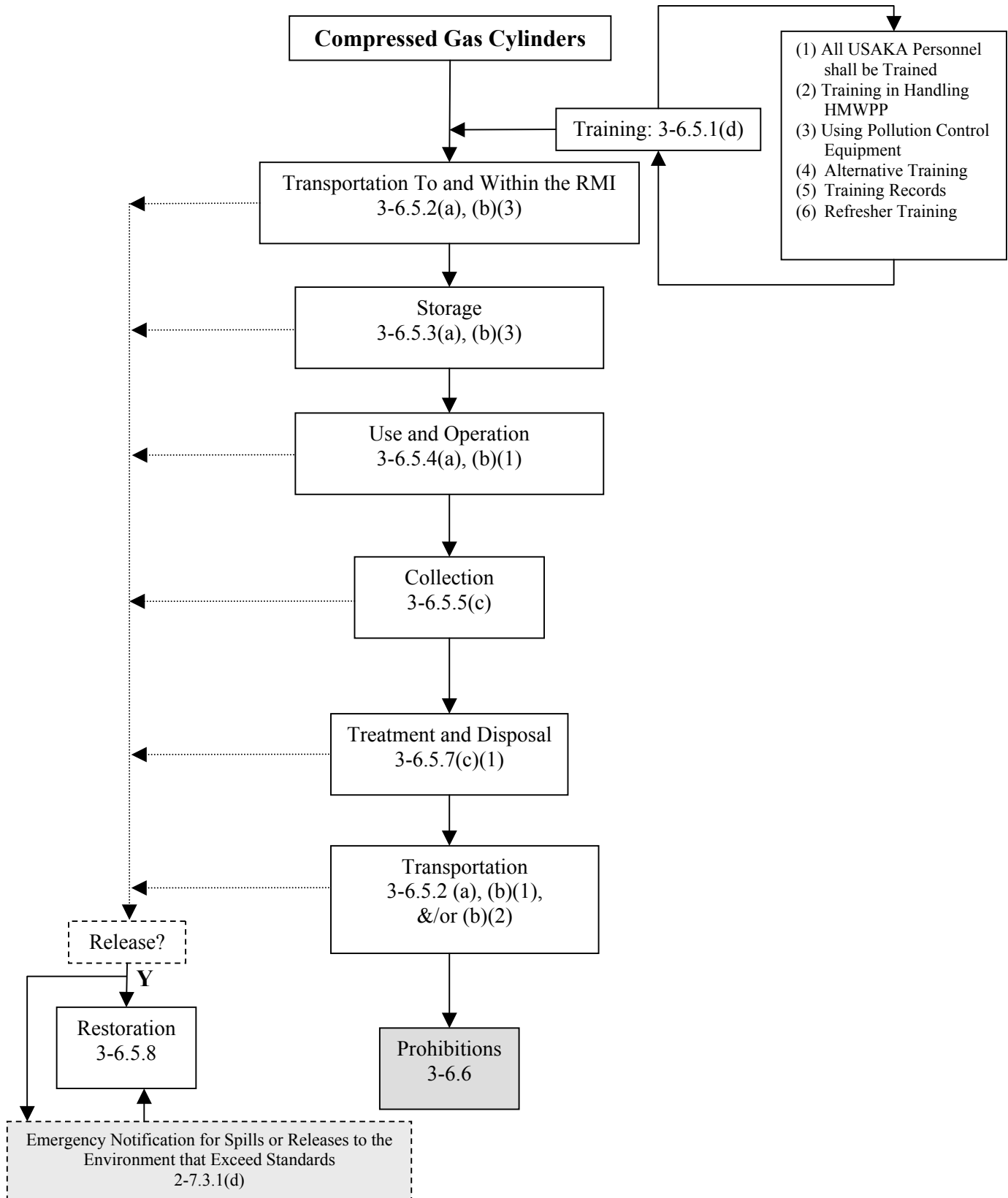
**FIGURE 3-6.1.7  
USED OIL MANAGEMENT**



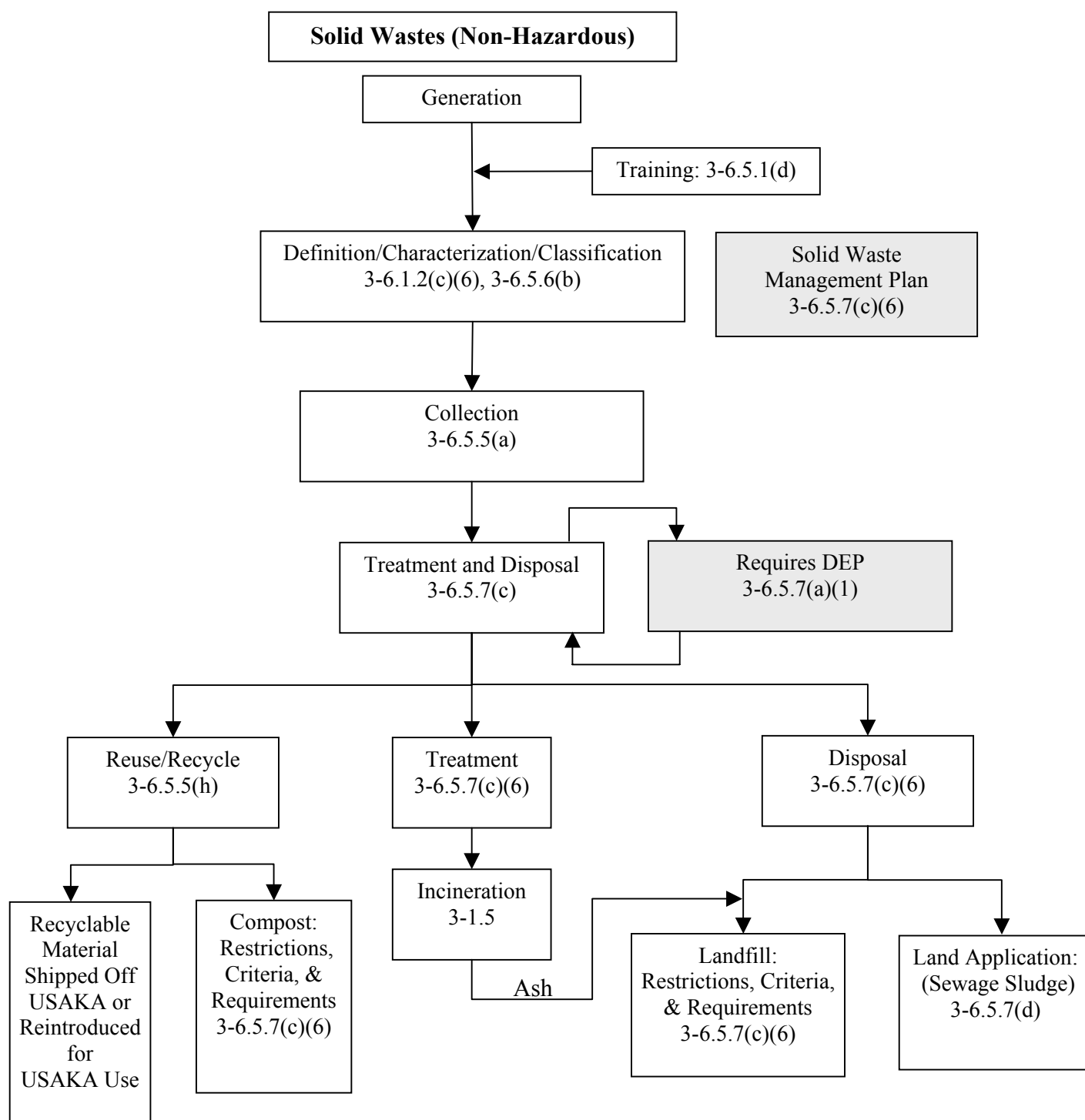
**FIGURE 3-6.1.8  
PESTICIDE MANAGEMENT**



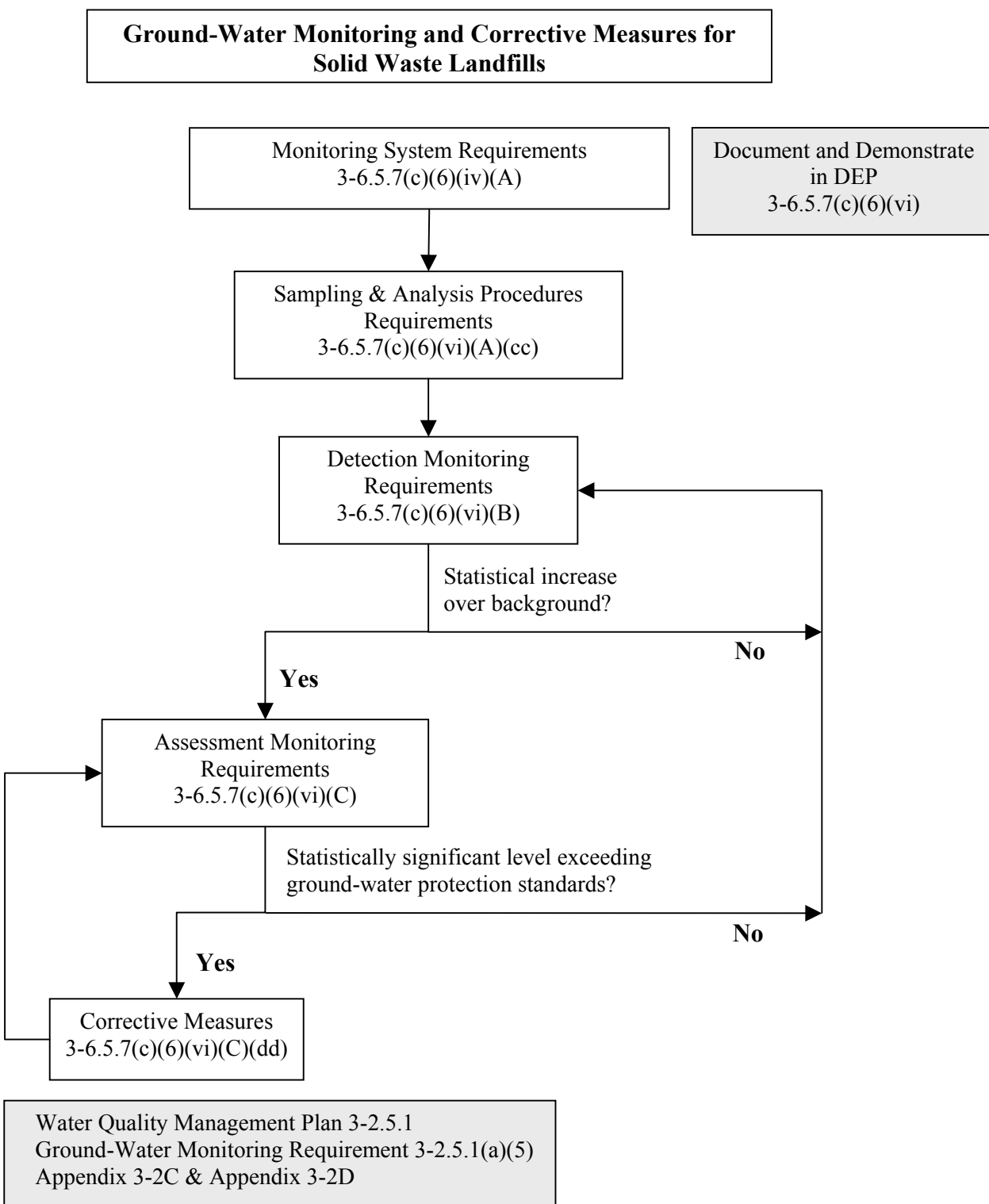
**FIGURE 3-6.1.9  
COMPRESSED GAS CYLINDER MANAGEMENT**



**FIGURE 3-6.1.10**  
**SOLID WASTE MANAGEMENT (NON-HAZARDOUS)**



**FIGURE 3-6.1.11  
GROUND-WATER MONITORING AND CORRECTIVE MEASURES FOR  
SOLID WASTE LANDFILLS**



(b) Scope

The standards for material and waste management apply to all materials imported or introduced to USAKA. The materials shall be identified, classified, and managed in an environmentally responsible way.

(c) Phases

(1) Introduction, Identification, and Classification of Materials

All materials imported or introduced into the RMI for use by USAKA operations shall be identified and classified through a central system, which is defined in Sections 3-6.5.1(a) through (c). Through this process, USAKA shall impose prohibitions and restrictions on use and shall establish guidelines for storage management. Employees who handle or otherwise deal with hazardous substances or hazardous waste shall receive training that must be documented and verified in compliance with Section 3-6.5.1(d).

(2) Transportation

The four points in the material-management scheme that involve transport are as follows: first, get the materials to the USAKA-controlled islands; second, distribute materials to the point of use (interisland and intransland transport); third, move wastes and materials to a central location for staging for disposal; and fourth, dispose of the materials. The methods of handling unused products or product wastes during transport shall be determined by the classification of the material and the associated risk. Transportation standards for each classification of material and waste are discussed in Section 3-6.5.2.

(3) Storage

Materials with hazardous characteristics shall be identified, segregated, monitored and stored in a manner which will protect them from the elements and provide adequate spill prevention and ventilation. Materials and products that are subject to storage requirements include hazardous materials and petroleum products, all phases of compressed gases, pesticides, and controlled medical substances. Used materials and wastes shall be subject to comparable storage requirements that consider their hazardous characteristics. Hazardous waste may be accumulated and stored for up to 90 days, with possible extensions up to 120 days, before the waste must be shipped off USAKA. Storage requirements are discussed in detail in Section 3-6.5.3.

(4) Use and Operation

Materials shall be purchased for specific uses. Alternative uses of products shall be investigated by safety and environmental personnel before their implementation to ensure that no adverse health or environmental problems will arise. Requirements for use and operation are discussed in Section 3-6.5.4.



(5) Collection of Waste

Specific guidance must be followed for collecting each classification of material to ensure protection of public health and safety and the environment. Regulations for collection and recycling are discussed in Section 3-6.5.5.

(6) Characterization of Waste

All wastes shall be characterized as solid waste, hazardous waste, or waste that requires special handling, such as a sample of solid waste or a sample of waste, soil, or air. Waste with unknown constituents shall be considered hazardous waste until determined otherwise. Characterization of wastes is discussed in Section 3-6.5.6.

(7) Treatment and Disposal

Nonhazardous solid wastes shall be treated at USAKA in a way that is most beneficial to the island community. Specifically, reuse or recycling, energy recovery, and soil remediation shall be considered as alternatives to incineration and landfilling. Hazardous wastes or general solid waste shall not be treated or disposed of at USAKA except in accordance with a completed DEP (Section 2-17.3). All other solid waste (e.g., construction debris) shall be managed and disposed of in accordance with the solid waste management plan required in Section 3-6.5.7(c)(6)(i).

Materials shall be disposed of according to the classification identification that is determined by following the requirements of Appendices 3-6A and 3-6B. Wastes that require offsite shipment for disposal shall be collected, packaged, labeled, manifested, and shipped to a USEPA-approved facility for final disposal.

(8) Restoration

Because of the localized and homogeneous nature of the USAKA environment and the development of extensive baseline information on the soil, air, and water surrounding USAKA, responses to discharges and releases can be expedited. The response activities, which are specified in Section 3-6.5.8, shall proceed in four phases: discovery and notification; initial response (emergency or removal, as needed); assessment and planning; and remediation.

The KEEP, as described in Section 3-6.4.1, shall discuss measures for preventing spills and other unintentional releases and for establishing coordinated and effective responses to spills of solids and liquids onto or into the USAKA environment, using all available resources to meet the threat.

### **3-6.2 DERIVATION**

Section 3-6 of the Standards is derived from applicable sections of the implementing regulations for the following: FIFRA, as amended; CERCLA; TSCA, as

amended; RCRA, as amended; and the CWA. RMIEPA regulations also have been consulted.

### **3-6.3 SUMMARY OF CHANGES**

The standards for material and waste management integrate requirements that are comparable to the U.S. statutes and regulations on which they are based by categorizing the management aspects and addressing the materials introduced to USAKA as they move from one management category to the next, as depicted in Figure 3-6.1.2. The standards differ from the U.S. statutes and regulations in that they address the provisions that are applicable at USAKA while establishing requirements that are more stringent in some categories and consolidating requirements for most materials, the goal being to prevent pollution. After being introduced at USAKA and classified, materials are subject to security, storage, and inspection provisions that are not required in the United States. For example, the provisions for transportation, management, and disposal of medical waste required in these standards are not in U.S. statutes and regulations. Overall, in cases where the parent regulations were not consistent, the standards have been derived from the more stringent requirements. The standards for material and waste management differ from the implementing regulations for the individual statutes, as described below.

For FIFRA, the standards are essentially the same as the U.S. requirements for training and guidance; importing, distributing, and selling pesticide products; records keeping; authorization for disposal; emergency and crisis exceptions; suspending the use of, canceling, or banning products; certifying applicators; and reporting spills, product misuse, or unauthorized disposal.

For CERCLA, the approach in the Standards is designed to be more preventive than restorative. Positive management controls for hazardous materials, waste, and petroleum products (HMWPP) should prevent releases to the environment of those substances, thus providing the maximum protection for public health and safety. In case of a release of HMWPP into the environment, Section 3-6.5.8 of the standards provides for a streamlined study process that is designed to accelerate the time between identification of a release and cleanup of the contamination. Public involvement and agency review are included in the decision process to ensure that all concerns are addressed.

For TSCA, the standards are made more stringent by prohibiting new uses of PCBs or introduction of new PCBs or PCB items, prohibiting disposal of PCBs or PCB items at USAKA facilities, requiring that PCBs be sent off island for disposal in a disposal facility approved by EPA within 120 days after removal from service, and prohibiting disposal of remaining asbestos material at USAKA.

For RCRA, the Standards contain stringent requirements for the collection, storage, transportation and treatment of hazardous waste. All hazardous and general solid waste treated or disposed at USAKA must be documented in a Document of Environmental Protection, subject to consultation with the Appropriate Agencies as well

as subject to public scrutiny. Waste minimization, recycling and reuse are encouraged in the standards.

### **3-6.4 PLANS**

#### **3-6.4.1 Kwajalein Environmental Emergency Plan**

(a) General Guidelines for Preparing and Implementing the Kwajalein Environmental Emergency Plan (KEEP)

(1) To develop coordinated and effective responses to releases and environmental threats, USAKA shall develop a contingency plan that establishes a well-coordinated response, using all available resources to meet the threat. The plan shall address the probable locations of discharges or releases, the resources available to respond to incidents, where the resources can be obtained, the location and inventory of response equipment, methods for handling and disposing of waste, facilities that are appropriate to the waste- management practices, and a management structure for responding to discharges or releases. Copies of the KEEP and any modifications to it shall be provided to the Appropriate Agencies.

(2) The KEEP shall be consistent with all applicable provisions of these Standards. The KEEP shall encompass all activities and locations that could potentially experience uncontrolled releases of HMWPP into the environment. The KEEP shall be kept current through revisions to accommodate changes in the material or waste streams. The KEEP shall be reviewed at least every two years and revised as necessary to remain accurate and current.

(3) The KEEP shall be prepared according to good engineering practices and shall have the full approval of management at a level having authority to commit the necessary resources. If the plan calls for additional facilities or procedures, methods, or equipment that are not yet fully operational, those items should be discussed in separate paragraphs, and the details of installation and operational start-up should be explained separately.

(4) The Commander, USAKA, is responsible for developing restoration plans in response to discharges of oil and past releases of hazardous substances, pollutants, or contaminants. The Commander, USAKA, shall, where appropriate, establish planning and coordination activities with the RMI if mutual assistance is required to remediate the effects of the discharges or releases. Restoration procedures shall be consistent with and reflected in the KEEP.

(5) For facilities that have experienced one or more spills within a 12 month period, the KEEP shall include a written description of each such spill, the corrective action taken, and the plans for preventing a recurrence.

(6) Where experience indicates a reasonable potential for equipment failure (such as tank overflow, rupture, or leakage), the KEEP shall include a prediction of the direction,

rate of flow, and total quantity of regulated material that could be discharged from the facility as a result of each major type of failure.

(7) Whenever containers or equipment are discovered to be leaking, the KEEP shall describe the immediate steps that shall be taken to stop the leaking as soon as possible. Leaking equipment or containers shall be inspected daily until the leaking is stopped.

(8) The KEEP shall include procedures for maintaining records and performing routine inspections of USAKA facilities, including spill response facilities and equipment. Records and inspection reports shall be signed by the appropriate facility supervisor or inspector and maintained in accordance with Section 2-13.

(9) The KEEP shall include an inventory of all HMWPP used or generated at USAKA and be readily available for emergency planning and response purposes. At a minimum, the inventory shall contain the following information:

- (i) Material name(s).
- (ii) Normal storage and routine locations for using the material.
- (iii) Minimum protective equipment for responding to spills or fires involving the material.
- (iv) Identification number of USDOT emergency-response handbook.
- (v) Location of Material Safety Data Sheet (MSDS), as described in 29 CFR 1910.1200.
- (vi) Quantities typically used.

(10) In addition to the required prevention standards listed under Section 3-6.5.3(a)(9), the KEEP shall include a complete discussion of conformance to other relevant requirements of these Standards, including: fuel transfer between watercraft, inspection and records, security, personnel training and spill prevention, material inventory and storage locations, reporting, response, emergency equipment, notification, and monitoring.

(b) Response Procedures to be Documented in the KEEP

(1) Because of the special environmental conditions at USAKA, groundwater vulnerability, and limited treatment and disposal options, the KEEP shall provide clear and comprehensive procedures to immediately respond to emergency situations and releases. Response procedures and information to be documented in the KEEP shall include but not be limited to the following (also see Figure 3-6.5.8):

**[3-6.4.1(b)]**

- (i) Identification of facilities where hazardous materials and petroleum products and wastes are stored or used and routes for transporting HMWPP.
- (ii) Methods and procedures to be followed by facility operators and emergency and medical personnel in responding to releases of hazardous materials.
- (iii) Designation of site and facility emergency coordinators who will make initial determinations to implement site emergency-response plans and notifications to the On-Scene Coordinator (OSC) and Commander, USAKA.
- (iv) Procedures providing reliable, effective, and timely notification by the site and the facility emergency coordinators to the OSC and the Commander, USAKA.
- (v) Methods for determining the occurrence of a release and the area and population likely to be affected.
- (vi) A description of emergency equipment and facilities at each site, including identification of the person responsible for the equipment. At a minimum, each of the 11 islands controlled by USAKA shall have the capability to immediately respond to spills. The response equipment shall be sufficient for initial responses until additional equipment, if needed, can be deployed.
- (vii) Evacuation plans, including provisions for precautionary evacuations and alternative traffic routes.
- (viii) Designation of a USAKA-wide OSC by the Commander, USAKA. The designated OSC shall be a government official with authority to direct contractor activities and commit resources.
- (ix) Training programs [Section 3-6.5.1(d)] for emergency-response and medical personnel.
- (x) Methods and schedules for exercising the emergency-response procedures.
- (xi) Appropriate Agency and emergency notification procedures required under Sections 2-7.2.1(h) and 2-7.3.1.

**3-6.4.2 Hazardous Material Management Plan**

- (a) A Hazardous Materials Management Plan (HMMP) shall be prepared to address USAKA's import, use, handling, and disposal of hazardous material. This plan shall include an inventory of hazardous materials routinely imported and used at USAKA. The revisions to the HMMP shall include both a description of the steps taken to reduce the volume and toxicity of the generated waste since the last revision, and a description of the changes in volume and toxicity of waste achieved since the last revision.

- (b) The HMMP shall be incorporated in the KEEP.

### **3-6.4.3 Hazardous Materials Procedures**

- (a) Tenants, construction contractors, program offices, and other recipients importing hazardous materials into USAKA shall submit a separate, activity-specific Hazardous Materials Procedure to the Commander, USAKA for approval within 15 days of receipt of the material or before use, whichever comes first.
- (b) The Hazardous Materials Procedure shall describe how the user will import, use, handle, and dispose of materials in compliance with the UES and consistent with USAKA's HMMP.

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### **3-6.5 PERFORMANCE STANDARDS**

#### **3-6.5.1 Introduction, Identification, and Classification of Materials; and Documentation of Employee Training**

##### **(a) Introduction**

(1) A centralized system shall be established at USAKA that identifies and classifies all materials imported or introduced into the RMI for use by USAKA operations. Through this system, USAKA will determine whether a material requires specific safeguards including those required by these Standards, to protect public health and safety and the environment from the improper procurement, use, storage, and transportation of the material.

(2) USAKA shall manage and shall have the ability to prohibit the procurement, use, storage, or transportation of all materials that, because of their hazard, toxicity, or other harmful characteristics, will endanger public health and safety and the environment.

##### **(b) Identification**

Materials imported or introduced into the RMI for use by USAKA operations shall be properly identified by one or more of the following types of information:

- (1) Labeling [according to USDOT (49 CFR 172 E) or NFPA specifications]
- (2) MSDS
- (3) Common name
- (4) Scientific or chemical name
- (5) Chemical Abstract Service (CAS) number

##### **(c) Classification**

All materials shall be identified as belonging to one of three categories: General-Use Materials, Hazardous Materials and Petroleum Products, and Prohibited Materials. These classifications shall be determined on the basis of the product's toxicity, persistence in the environment, and chemical composition and by other parameters that can affect public health and safety and the environment.

(1) General-Use Materials. These materials, because of their minimal risk to public health and safety and the environment or their small quantities, do not require specific written management procedures. This category is intended for materials procured for an individual's personal use, general-purpose office supplies, and other nonhazardous, low-risk materials. At a minimum, the category includes: foods; drugs; and cosmetics



packaged for sale to consumers; lumber; manufactured articles available at USAKA retail establishments and intended for personal use; and other materials that do not pose substantial current or potential hazards to public health and safety and the environment.

(2) Hazardous Materials and Petroleum Products. These materials require specific written management procedures (Section 3-6.4.3) to minimize risks to public health and safety and the environment from their procurement, storage, use, or transportation. Records of the disposition of these materials shall be maintained in compliance with Section 2-13. The procedures may include restrictions on product use to prevent situations that result in hazards to public health and safety and the environment. At a minimum, the category includes all materials listed in Appendix 3-6C; oil and all petroleum products; PCB equipment and PCB items; pesticides; compressed gas; asbestos; and all other material deemed by the Commander, USAKA, to pose current or potential hazards to public health and safety and the environment. On the date that the Standards become effective, PCB items and transformers shall be inventoried [Section 3-6.5.4(c)(3)(i)], and the inventory shall be updated annually, as described in Section 2-7.1.6(b).

(3) Prohibited Materials. These materials are prohibited from being imported or introduced into the RMI for use by USAKA operations. This category includes all materials that, because of their hazard, toxicity, or other harmful characteristics, will endanger public health and safety or the environment. At a minimum, this category includes all unregistered, banned, canceled, or suspended products regulated by FIFRA; all new PCBs or PCB items; asbestos; and all other material deemed by the Commander, USAKA, to endanger public health and safety or the environment.

(d) Documentation of Employee Training

(1) All USAKA personnel (1) who operate, maintain, or manage equipment or processes that use pollution-control devices or the continued operation of which is required to comply with a limit on discharge of pollution or (2) who are involved in the handling, treatment, storage, or cleanup of hazardous or toxic wastes, pesticides, or hazardous substances as discussed in the Standards shall have the level of knowledge required for performing their tasks safely and in a way that preserves the environment. Before engaging in any of these activities, USAKA personnel shall receive the required training to ensure that they are proficient in performing their tasks in an environmentally safe way. Verification of the training must be noted in the training record, and the immediate supervisors, the shop foreman, or the job leader shall document that adequate training has been provided.

(2) Handling Hazardous Materials, Wastes, and Petroleum Products

(i) Personnel whose employment requires them to be knowledgeable of the proper handling of HMWPP, as discussed in Sections 3-6.5.2 through 3-6.5.8, or of the proper responses or remedial actions for handling the release of HMWPP (Section 3-6.5.8) or who are responsible for managing or supervising personnel who handle

HMWPP shall successfully complete a course of study or training and demonstrate the knowledge and proficiency that enable them to perform their jobs in an environmentally safe way. The following training shall be conducted.

(A) For the workers engaged in processes that generate hazardous waste and whose duties are limited to collecting and staging waste: a basic course on the properties and dangers of hazardous waste and on proper handling procedures and emergency-response procedures.

(B) For the workers engaged in managing the collection of hazardous waste and for the workers engaged in storage, treatment, or disposal activities: a course of study covering the basic course material, including specialized training in the requirements for treatment, storage, and disposal.

(C) For the workers and managers whose responsibilities include responding to releases and cleaning up releases of hazardous waste and substances: in addition to the basic treatment, storage, and disposal training (Section 3-6.5.1(d)(2)(i)(B) above), additional training in the proper and safe methods for responding to releases and for cleaning up contaminated soil and water.

(D) For the workers engaged in transporting hazardous waste: training for ensuring that personnel can safely prepare hazardous wastes for transport in accordance with Section 3-6.5.2.

(3) Using Pollution-Control Equipment (e.g., spill response equipment)

(i) The course of study or training shall result in demonstrated knowledge of, and proficiency in, the respective areas of responsibility by the personnel who undergo the training.

(ii) All USAKA personnel who deal with hazardous waste or hazardous substances or who operate control devices having the primary purpose of protecting public health, safety, and the environment or who supervise the operation of such devices shall successfully complete a course of study or training that at a minimum deals with:

(A) The basic theory of the purposes of pollution-control devices and of treatment and control methods.

(B) Operating pollution-control equipment, mixing chemicals, and using treatment methods.

(C) The hazards of the chemicals and materials handled.

(D) Health issues associated with chemicals and materials, including the use of MSDSs.

**[3-6.5.1(d)]**

(E) Breakdown conditions and their significance, causes, and corrective actions.

(F) Emergency responses to spills and releases and the proper use of spill-response equipment.

(G) The purpose and proper wearing and use of personnel protective equipment.

(H) Procedures for notifying emergency crews and fire and environmental personnel.

(I) Storage, safe handling, and compatibility requirements for classes of chemicals and materials.

(J) Proper initial responses to fire and other safety issues.(4)

**(4) Alternative Training**

As a substitute for a formal course of study as described in Section 3-6.5.1(d)(2)(i)(B) and (C), USAKA may provide on-the-job training to its personnel. The employee must demonstrate sufficient knowledge and proficiency in the relevant area of responsibility to qualify for this alternative.

**(5) Training Records**

The employee's supervisor shall certify the training, and records shall be maintained in the personnel department or at the work site for each individual who requires training. Records of the training shall be maintained for as long as the employee is in that function or for 10 years, whichever is longer.

**(6) Refresher Training**

Annual refresher training in hazardous waste, pollution control, treatment methods, spill response and cleanup, and emergency procedures shall be conducted for all personnel who are required to receive the initial training. Information on the annual refresher training shall be noted in the training records, and the records shall be maintained according to the requirements of Section 3-6.5.1(d)(5).

### **3-6.5.2 Transportation of HMWPP**

For purposes of these Standards “transportation” means the relocation of materials by vehicle, vessel or aircraft.

#### **(a) General Requirements**

(1) Transportation of HMWPP shall meet manufacturer’s recommendations and be consistent with USDOT requirements. All personnel who transport HMWPP shall receive the training outlined in 3-6.5.1(d) and cited in Section 2-10.

(2) Transport of materials for ocean dumping shall be conducted in compliance with the restrictions and prohibitions of Section 3-5.

(3) All vehicles and vessels used to transport HMWPP shall have equipment and materials readily available to contain and cleanup any spills or releases of HMWPP.

#### **(b) Special Requirements**

##### **(1) Transport of Hazardous Waste from USAKA to the United States**

In addition to the general requirements in Section 3-6.5.2(a) above the transportation of hazardous wastes from USAKA to the United States shall comply with the following requirements.

##### **(i) Pretransport Requirements**

Before transporting hazardous waste or offering hazardous waste for transport, the generator shall comply with the following requirements:

##### **(A) Packaging**

Before transporting hazardous waste or offering hazardous waste for transport from USAKA, the generator shall package the waste in accordance with USDOT regulations for packaging under 49 CFR 173, 178, and 179.

##### **(B) Labeling**

Before transporting or offering hazardous waste for transport from USAKA, the generator shall label each package in accordance with USDOT regulations for hazardous materials under 49 CFR 172.

##### **(C) Marking**

[3-6.5.2(b)]

(aa) Before transporting or offering hazardous waste for transport from USAKA, the generator shall mark each package of hazardous waste in accordance with USDOT regulations for hazardous materials under 49 CFR 172.

(bb) Before transporting hazardous waste or offering hazardous waste for transport from USAKA, the generator shall mark each container of 110 gallons or less used in such transport with the following words and information, displayed in accordance with 49 CFR 172.304:

HAZARDOUS WASTE: Federal Law Prohibits Improper  
Disposal. If found, contact the nearest police or public safety  
authority or the U.S. Environmental Protection Agency.  
Generator's Name and Address \_\_\_\_\_  
Manifest Document Number \_\_\_\_\_

(D) Using Placards

Before transporting hazardous waste or offering hazardous waste for transport from USAKA, the generator shall use placards or shall offer the initial transporter the appropriate placards according to USDOT regulations for hazardous materials under 49 CFR 172, Subpart F.

(ii) Manifest Requirements

(A) A generator who transports from USAKA, or offers for transport from USAKA, hazardous waste for offsite treatment, storage, or disposal shall prepare a "Uniform Hazardous Waste Manifest" on USEPA form 8700-22, and, if necessary, USEPA form 8700-22A, according to the instructions in the appendix to 40 CFR 262.

(B) The generator shall designate on the manifest one facility that is permitted to handle the waste described on the manifest.

(C) The generator also may designate on the manifest one alternative facility that is allowed to handle the waste in case an emergency prevents delivery of the waste to the primary designated facility.

(D) If the transporter cannot deliver the hazardous waste to the designated facility or the alternative facility, the generator shall either designate another facility or instruct the transporter to return the waste as specified in Section 3-6.5.2(b)(1)(v).

(E) The manifest shall consist of at least the number of copies necessary for providing the generator and all transporters with one copy each for their records, and two copies for the owner or operator of the designated facility (one copy for their records, and another copy to be returned by the owner or operator of the designated facility to the generator).

(F) The generator shall:

(aa) Sign the manifest certification by hand.

(bb) Ensure that the handwritten signature of the initial transporter and the date of acceptance are on the manifest.

(cc) Retain one copy.

(dd) Give the transporter the remaining copies of the manifest.

(ee) Include the following declaration on the manifest: I hereby declare that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway and vessel according to-applicable international and national government regulations. "I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable, and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment."

(G) For shipments of hazardous waste that are transported to the United States solely by water (only bulk shipments), the generator shall send three copies of the dated and signed manifest to the owner or operator of the designated facility or to the last water (bulk shipment) transporter who will handle the waste in the United States if the waste is exported by water. Copies of the manifest are not required for each transporter.

(H) For shipments of hazardous waste to a designated facility in an authorized state that has not obtained authorization to regulate the particular waste as hazardous, the generator must ensure that a representative of the designated facility agrees to sign and return the manifest to the generator and that all out-of-state transporters sign and forward the manifest to the designated facility.

(I) The manifest shall contain the following information: conform to USEPA and DOT requirements.

(aa) Type of waste.

(bb) Name of waste.

(cc) Hazard class of waste.

(dd) Amount of waste in gallons, pounds or kilograms (PCBs).

(ee) Information on compatibility of hazardous wastes.

**[3-6.5.2(b)]**

(ff) Hazardous-waste code.

(gg) Handling precautions.

(hh) Emergency telephone numbers and contact points for local fire, environmental, and safety personnel.

(ii) Name of the generator of the waste.

(jj) Special storage requirements.

(kk) Disposal restrictions or requirements.

(ll) Designated destination of the waste and alternative destination.

(J) Before transporting the hazardous waste, the transporter shall sign and date the manifest, acknowledging acceptance of the hazardous waste from the generator. The transporter shall return a signed copy of the manifest to the generator before leaving the generator's area.

(K) The transporter shall ensure that the manifest accompanies the hazardous waste.

(L) A transporter who delivers the hazardous waste to another transporter or to the designated facility must:

(aa) Obtain the date of delivery and the handwritten signature of that transporter or of the operator of the designated facility on the manifest.

(bb) Retain one copy of the manifest in accordance with the records-keeping requirements.

(cc) Give the remaining copies of the manifest to the accepting transporter or to the operator of the designated facility.

(iii) Records Keeping and Reporting

(A) Records Keeping

(aa) The generator shall keep a copy of each signed manifest for three years or until receiving a signed copy from the designated facility that received the waste. The signed copy shall be retained as a record (Section 2-13).

(bb) The generator shall keep a copy of each biennial report [Section 3-6.5.2(b)(1)(iii)(B)] and exception report for at least three years from the due date of the report.

(cc) A generator shall keep records of all test results, waste analyses, and other determinations of hazardous characteristics for at least three years from the date that the waste was last transported for onsite or offsite treatment, storage, or disposal.

(dd) The periods of retention stipulated are extended automatically during the course of unresolved conflict regarding the activity, or as requested by an appropriate agency.

(B) Biennial Report

Every two years USAKA shall submit to the Appropriate Agencies a report summarizing hazardous waste shipments to the U.S. for the two year period covered by the report. The report shall include the following information:

- (aa) The total of hazardous wastes shipped during the period
- (bb) The amounts and types of waste shipped, by individual shipments
- (cc) The dates of shipments

(C) Exception Reporting

(aa) A generator of hazardous waste who does not receive a copy of the manifest, as described in Section 3-6.5.5(a)(2)(ix), showing the handwritten signature of the owner or operator of the designated facility within 35 days of the date the waste was accepted by the initial transporter shall contact the transporter or the owner or operator of the designated facility to determine the status of the hazardous waste.

(bb) A generator of hazardous waste shall submit an exception report, as cited in Section 2-7.1.6(d), to the Appropriate Agencies if the generator has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 75 days of the date the waste was accepted by the initial transporter. The exception report shall include:

(I) A legible copy of the manifest for which the generator does not have confirmation of delivery.

(II) A cover letter signed by the generator or an authorized representative explaining the steps taken to locate the hazardous waste and the results of the effort.

(cc) A generator of hazardous waste who does not receive a copy of the manifest showing the handwritten signature of the owner or operator of the designated facility within 90 days of the date the waste was accepted by the initial transporter shall submit a legible copy of the manifest and a statement that the generator has not received confirmation of delivery to the Appropriate Agencies as specified in Section 2-7.1.6(e).



**[3-6.5.2(b)]**

(iv) A transporter of hazardous wastes shall obtain an identification number by submitting USEPA Form 8700-12 to USEPA. Informational copies of the request shall be provided to the Appropriate Agencies.

(v) The transporter shall deliver the entire quantity of hazardous waste accepted from a generator to the designated facility. If the waste cannot be delivered to the designated facility because an emergency prevents delivery, the transporter shall deliver the entire quantity of hazardous waste to an alternative designated facility or to the next designated transporter. If the waste cannot be delivered in accordance with these procedures, the transporter shall contact USAKA for additional directions and shall revise the manifest according to USAKA's instructions.

**(2) Transport of HMWPP between USAKA Islands**

In addition to the general requirements in Section 3-6.5.2(a) transportation of HMWPP within USAKA shall comply with the following requirements.

(i) HMWPP shall be transported between islands using only containers approved by USDOT, as cited in Section 3-6.5.2(a), that are compatible with the material being transported. No container shall be used that is leaking, has deteriorated significantly as a result of rust, is bulging from overpressure, or is damaged in such a way that material is liable to leak. Containers that are unacceptable for transport shall be placed in containers approved by USDOT, or the HMWPP shall be transferred to a container approved by USDOT. Containers shall be covered to prevent rain from entering.

(ii) Vehicles and barges used to transport HMWPP shall be appropriately sized and shall be compatible with the material being transported. The vehicle or barge shall be rated for the maximum allowable load intended for transport, and in no case shall the maximum load be exceeded. Weight and balance figures for the vehicles and barges shall ensure that the load is properly balanced. Vehicles and barges shall be clean and free of debris. Vehicle operators shall ensure that any HMWPP residue left in the transport equipment is removed and disposed of in compliance with the requirements of Sections 3-6.5.5 and 3-6.5.7.

(iii) Transport equipment shall be identified by signs that are visible on both sides of the vehicle or barge. The signs shall conform to the requirements of USDOT regulations (49 CFR 172.101) and shall indicate the hazard classes of the HMWPP. The sizes of the signs shall conform to USDOT regulations (49 CFR 172.300), and the signs shall be bilingual (English and Marshallese).

(iv) USAKA shall notify the Appropriate Agencies, as provided in Section 2-7.2.1(h), if the amount of any spill exceeds the reportable quantities list in Appendix 3-6C.

(v) All HMWPP transported between the 11 USAKA- leased islands shall be accompanied by documentation that includes, but is not limited to, the following information:

(A) The amounts transported

(B) As relevant, all completed waste-profile sheets that include, at a minimum, the information described Section 3-6.5.2(b)(2)(ii)(I).

(C) As relevant, all completed waste turn-in documents, such as "Defense Turn-In Document" (DD 1149) or equivalent, including a record of the dates on which hazardous waste was shipped to and received at all applicable approved staging and temporary storage areas (Section 3-6.5.3) at USAKA.

(D) Other descriptions of HMWPP content (e.g., MSDS).

(3) Transport of Compressed Gases

Compressed gases shall be included in the classification of hazardous materials and shall be transported in compliance with the requirements for transport of HMWPP as specified in Section 3-6.5.2(a), (b)(1) and/or (b)(2) above.

(4) Transport of Regulated Medical Waste

(i) From Health Care Facility to Disposal or Storage Facility

(A) Filled bags of RMW shall not be transported loose. They shall be stored in rigid puncture-resistant, leakproof containers that will not tip over during transport. Transport containers may be reusable and shall be cleaned using the methods in Section 3-6.5.2(c)(3)(i), above.

(B) Vehicles used for transporting RMW shall be readily cleanable.

(C) All vehicles used for transporting RMW shall be cleaned weekly or more frequently as needed, using a hospital-grade detergent-disinfectant. The detergent-disinfectant shall be used in strict accordance with the manufacturer's instructions. If a spill occurs, the vehicle shall be cleaned immediately with a hospital-grade detergent-disinfectant. All vehicles used for transporting RMW shall be cleaned before being used for any other purpose.

(D) All vehicles used for transporting RMW shall carry a kit for spill containment and cleanup that is appropriate for responding to spills of RMW.

(E) Vehicles used for transporting RMW shall not stop during transport of RMW except for traffic control.

(F) The transporter shall verify that each RMW package is marked as required by Section 3-6.5.2(a).

(ii) From USAKA

The generator shall mark each package of regulated medical waste according to the following marking requirements before the waste is transported or offered for transport from USAKA. The outermost surface of the package shall be marked with a water-resistant identification tag showing the following information:

- (A) Generator's or intermediate handler's name.
- (B) Generator's or intermediate handler's identification number.
- (C) Generator's or intermediate handler's address.
- (D) Transporter's name.
- (E) Transporter's identification number.
- (F) Transporter's address.
- (G) Date of shipment.
- (H) Identification of contents as regulated medical waste.

(5) Transport of PCBs and PCB Items

In addition to the requirements in Sections 3-6.5.2(a), (b)(1) and (b)(2), the following requirements shall apply to transport of PCBs and PCB items:

(i) For each PCB article that is not in a PCB container or in a PCB-article container, the serial number, or other identification if there is no serial number, the date of removal from service for disposal, and the weight in kilograms of the PCB waste in each PCB article shall be marked on the exterior of the PCB item.

(ii) If the state shown on the manifest for the shipment (i.e., consignment state) and discussed in Section 3-6.5.5(a)(2)(ix), supplies the manifest and requires its use, the generator shall use that manifest.

### 3-6.5.3 Storage

#### (a) General Requirements - HMWPP

Before being distributed, transported, treated or used, all HMWPP shall be stored in a way that will protect against the unintentional release of the materials to the environment. The storage procedures shall be included in the Hazardous Materials Management Plan (Section 3-6.4.2). A HMWPP storage facility is an area or stationary fixture that contains 10 percent of the applicable reportable quantity (Appendix 3-6C) or 55 gallons, whichever is lesser, of an HMWPP for more than 12 hours. For purposes of this section, HMWPP include: hazardous materials, substances and waste; petroleum products; regulated medical waste; asbestos waste; pesticides; waste oil; compressed gas and cylinders, except those containing compressed air only; and PCBs and PCB items that are not in active service. For all HMWPP, protective measures shall include at a minimum:

(1) Segregation of incompatible HMWPP including segregation of all unregulated incompatible HMWPP stored in the same area.

(i) Household wastes shall be stored in designated areas until final disposition.

(ii) Commercial wastes shall be identified and segregated as hazardous or nonhazardous wastes. Wastes of unknown origin shall be treated as hazardous, as discussed in Section 3-6.5.6(c), until proven to be other than hazardous or exempt from regulation, and shall be stored in compliance with the requirements of Section 3-6.5.3(b).

(iii) HMWPP shall be segregated in accordance with NFPA specifications or with charts and literature on chemical compatibility. Segregation considerations shall include, at a minimum, categories for flammability, combustibility, corrosivity (pH-specific), poisons, explosives, reactivity, and toxicity.

(2) (Reserved)

(3) Location in an area that if flooded would pose minimal risk to populated areas or the water supply. An assessment of groundwater quality and existing or potential use shall be made prior to siting a HMWPP storage facility. To the maximum extent possible HMWPP storage facilities shall not be located in areas with Class I groundwater as defined in Section 3-2.4.2(a).

(4) (Reserved)

(5) Containers used to store materials shall be in good condition, shall be compatible with the items being stored, and shall be closed at all times while in storage. Containers used to store materials shall be handled in a way that does not cause the containers to rupture or leak.

**[3-6.5.3(a)]**

(6) Inspections. All storage areas, including the exteriors of aboveground storage tanks as cited in Section 3-6.5.3(b)(2) and devices for liquid-level sensing as cited in Section 3-6.5.3(b)(2)(v), shall be inspected weekly to detect leaking or deteriorating containers and to ensure that all emergency equipment is functioning. All leaking containers and their contents shall be transferred immediately to properly marked nonleaking containers. All spilled or leaked materials shall be cleaned up immediately, using sorbents or other adequate means. Inspections shall be conducted by facility personnel whose training has been documented and verified in compliance with the requirements of Sections 2-10 and 3-6.5.1(d). Inspections shall be documented in accordance with the procedures described in the KEEP [Section 3-6.4.1(a)(8)]. The storage areas shall be inspected daily during loading and unloading operations.

(7) Labeling requirements: All HMWPP at USAKA shall be labeled in accordance with the relevant requirements of USDOT (49 CFR 172), USEPA and OSHA.

(8) Shelf Life

(i) Products from the facility shall be used on a first-in, first-out basis to minimize degradation due to shelf life and subsequent accumulation due to expiration of shelf life.

(ii) Products having short shelf lives shall be avoided or returned to the vendor if the length of shelf life is not compatible with real-time use.

(iii) Facility personnel shall seek verification from vendors on extensions of all products near or past shelf-life expiration. For the items available at retail outlets, notice of such verification shall be posted at the point of sale.

(9) Facility Requirements

Facility requirements for the storage of HMWPP and areas where treatment or disposal activities are performed are necessary to protect the public safety and environment. Requirements cover: security; signage; safety equipment; spill prevention and containment; and intra-facility material transfers.

(i) Protection from Weather and Heat

All HMWPP storage facilities shall be well ventilated and protected from sources of heat. Storage facilities shall be protected from exposure to the weather and have features to prevent rain or runoff from reaching HMWPP.

(ii) Security

All places at USAKA where HMWPP are being stored, treated, or disposed of shall be protected sufficiently to prevent unauthorized access. Areas where: pollution-control

devices are operating, such as the power plant; disposal operations are occurring; or where treatment facilities are located, such as the potable-water treatment facility or the sewage treatment plant, shall have:

- (A) Barriers, fences, or other means of preventing unauthorized access; and
  - (B) Facility lighting commensurate with the type and location of the facility.
- Consideration shall be given to:

- (aa) Discovery of spills occurring during hours of darkness.
- (bb) Prevention of spills caused by vandalism
- (iii) Marking

Signs shall be posted that say “DANGER: UNAUTHORIZED PERSONNEL KEEP OUT” (“KAUATATA: JAB DRELON NE EJELOK MELIM”) and contain a warning such as “HAZARDOUS WASTE” or “WASTEWATER TREATMENT FACILITY” or “POTABLE-WATER TREATMENT PLANT” or “PESTICIDES”, or other appropriate warning (e.g., “NO SMOKING”) in both Marshallese and English. Signs shall be posted on all four sides of the fenced facilities or near the entrance to the building if there is no fence. Signs shall be visible and legible 50 feet from where they are posted. HMWPP storage facilities shall have copies of the relevant MSDSs for all HMWPP stored at the facility. The MSDSs shall be located at the storage facility and readily available to operational personnel.

- (iv) Spill-Prevention Equipment

All facilities that store HMWPP shall have appropriate containment, response and spill-prevention controls for preventing and initially responding to a release. Secondary containment devices shall be capable of holding the content of the largest container or 10 percent of all non-gaseous HMWPP stored in the area, whichever is greater. Such facilities shall be equipped with weather-protection devices that are sufficient for preventing rain or runoff from entering the facility.

- (v) All facilities storing HMWPP shall be equipped with the following unless it can be demonstrated to the Commander, USAKA, or to his or her representative that none of the hazards posed by waste handling at the facility require any of the equipment specified below:

- (A) An internal communication or alarm system capable of providing immediate emergency instructions by voice or signal to facility personnel.

- (B) A device, such as a telephone that is immediately available at the scene of operations or a hand-held two-way radio that is capable of summoning emergency assistance from the island police department, fire department, or response team.

(C) Portable fire extinguishers; fire-control equipment, including as appropriate, special extinguishing equipment (such as equipment using foam, inert gas, or dry chemicals); spill-control equipment; personal protective equipment; and decontamination equipment (e.g, shower, eyewash station).

(D) Water of adequate volume and pressure for water hoses, or foam-producing equipment, or automatic spray systems.

(E) Appropriate containment or diversionary structures or equipment for preventing discharged material or waste from reaching the ground or water course. One, or more of the following preventive systems or its equivalent shall be used:

(aa) Onshore facilities shall have dikes, berms, or retaining walls that are sufficiently impervious for containing HMWPP.

(bb) Floors and curbing shall comply with the following standards:

(I) Impervious floors having sufficient curbing to contain at least the volume of the largest container being used or 10 percent of the total volume of stored, non-gaseous substances, whichever is greater.

(II) Floors and curbing constructed of continuous smooth and impervious materials, such as Portland cement, concrete, or steel, or means such as water stops (made of a material that is not reactive with the stored materials) shall be used to prevent or minimize penetration of stored materials.

(cc) Drainage systems shall comply with the following standards:

(I) Drainage from diked storage areas shall be restrained by valves or other means to prevent spills or excessive leakage of material into the drainage system. Diked areas may be emptied by pumps or ejectors, but they shall be closed and locked except when in use and under the supervision of an authorized individual, and they shall be activated manually. The condition of the accumulated material shall be examined before the material is emptied to ensure that no harmful material will be discharged into the environment. Flapper-type drain valves shall not be used to drain diked areas. Valves used for draining diked areas shall be of manual open-and-close design.

(II) No drain valves, floor drains, expansion joints, sewer lines, or other openings that would allow liquids to flow from the curbed area shall be used unless a positive control, such as a locking valve with limited access to the key, is used.

(III) The runoff rainwater shall be inspected to ensure compliance with the applicable water quality requirements of Section 3-2 and to ensure that no harmful discharge occurs.

(vi) Intrafacility Transfer Operations

(A) New or replacement buried piping shall include corrosion-prohibitive technology (e.g., protective wrapping, and coating, cathodic protection). If a section of buried line is exposed for any reason, it shall be examined for deterioration. If corrosion damage is found, additional examination and corrective action shall be taken as indicated by the magnitude of the damage. More frequent use of exposed pipe corridors or galleries is preferred.

(B) When a pipeline is not in service, the terminal connection at the transfer point shall be drained, purged if necessary, capped or blank-flanged, and marked as to origin.

(C) Pipe supports shall be properly designed to minimize abrasion and corrosion and to allow for expansion and contraction.

(b) HMWPP - Special Requirements

(1) Hazardous Wastes

In addition to the general requirements of Section 3-6.5.3(a) hazardous wastes shall be subject to the following requirements:

(i) Except as provided in Section 3-6.5.3(b)(1)(ii) below, a generator may accumulate and store hazardous waste, or store up to two 55 gallon containers of PCB containing small capacitors and light ballasts at a facility for up to 120 days provided that the following conditions are met. In no event shall hazardous waste be stored at USAKA, except as documented in a final DEP (Section 2-17.3), for more than 90 days, unless a 30 day extension has been granted in accordance with Section 3-6.5.3(b)(1)(i)(E) below.

(A) The waste is placed in containers approved by USDOT as cited in Section 3-6.5.5(a), or the waste is placed in tanks that meet the storage requirements of Section 3-6.5.3(b)(2).

(B) The date on which each period of accumulation begins is clearly marked and is visible for inspection on each container.

(C) While being accumulated on the site, each container and tank is labeled or marked clearly with the words "Hazardous Waste" or "Waste Oil" or other appropriate warning (e.g., PCBs, asbestos) in Marshallese and English.

(D) The generator complies with all applicable requirements of these Standards

(E) If hazardous wastes remain at the storage facility longer than 90



**[3-6.5.3(b)]**

days because of unforeseen, temporary, and uncontrollable circumstances, an extension of up to 30 days has been granted by the USAKA Commander. The Commander, USAKA may grant such an extension only after notification and consultation with the Appropriate Agencies in accordance with Section 2-7.2.1 (h)(ii).

(ii) The following waste are not subject to the requirements of Section 3-6.5.3(b)(1)(i) above:

(A) The waste identified in Section 3-6.5.7(b)(4) (Recyclable materials).

(B) Spent lead-acid batteries may be accumulated and stored for up to 180 days prior to shipment for recycling or disposal [Section 3-6.5.5(g)(3)].

(C) Asbestos waste may be accumulated and stored for up to 180 days prior to shipment to the United States for disposal [Section 3-6.5.7(c)(5)]

(2) Petroleum-Product Storage Tanks

In addition to the general requirements of Section 3-6.5.3(a) petroleum-product storage tanks shall be subject to the following requirements:

(i) No tank shall be used for storing oil unless its material and construction are compatible with the stored material and the conditions of storage.

(ii) Drainage of rainwater from the secondary containment area into a storm drain or a discharge of effluent into an open-water course is acceptable if:

(A) The bypass valve normally is sealed closed.

(B) Inspection of the runoff rainwater ensures compliance with the applicable water quality requirements of Section 3-2 and the KEEP, as discussed in Section 3-6.4.1, and runoff rainwater will not harm public health and safety and the environment.

(C) Under responsible supervision, the bypass valve is opened and resealed after drainage.

(D) Adequate records are kept of the procedures in Sections 3-6.5.3(b)(2)(ii)(A) through (C) above.

(iii) Precision leak testing of all existing underground storage tanks shall be completed within one year of the promulgation of the Standards and at two-year intervals thereafter.

(iv) Aboveground tanks shall undergo integrity testing every year, taking into account tank design (floating roof, etc.) and using techniques such as hydrostatic testing, visual inspection, or a system of nondestructive testing of shell thickness. Comparison

records shall be kept where appropriate, and tank supports and foundations shall be included in the inspections.

(v) Installations of new and replacement aboveground tanks, as far as practical, shall be fail-safe engineered or updated into a fail-safe-engineered installation to prevent spills. Consideration shall be given to one or more of the following devices:

(A) High-liquid-level alarms.

(B) High-liquid-level pump cutoffs.

(C) Communication between the tank gauger and the pumping source.

(D) A fast-response system for determining the liquid level of each bulk-storage tank, such as digital computers, telepulse, or direct-vision gauges or their equivalent. Liquid-level-sensing devices shall be tested or inspected in compliance with Section 3-6.5.3(a)(6).

(vi) Effluents that are discharged into the waters of the RMI shall be documented in a DEP (Section 2-17.3) and shall be handled in disposal facilities that are monitored frequently enough to detect system upsets that could cause an oil spill.

(vii) Visible oil leaks that could result in a loss of oil from tank seams, gaskets, rivets, and bolts in amounts sufficiently large to cause oil to accumulate in diked areas shall be corrected promptly.

(viii) Mobile or portable oil-storage tanks or drums shall be positioned or located in a way that prevents spilled oil from reaching waters of the RMI and supplies of fresh water (i.e., not over the lens wells or in catchment areas). Secondary means of containment, such as dikes, catchment basins, or drip pans, that can hold the contents of the largest single compartment or tank or drum shall be available and shall be located so they will not be subject to flooding or washout.

(ix) The loading and unloading connections of oil pipelines shall be drained, purged if necessary, and securely capped or blank-flanged when not in service or when in standby service for more than 48 hours.

(x) The starter control on all oil pumps shall be locked in the "off" position or shall be located at a site accessible only to authorized personnel when the pumps are in nonoperating or nonstandby status.

### (3) Compressed Gas and Compressed-Gas Cylinders

Compressed gas cylinders or vessels containing only compressed air are not

**[3-6.5.3(b)]**

subject to the following requirements. In addition to the general requirements of Section 3-6.5.3(a) compressed gas and compressed gas cylinders shall be subject to the following requirements:

(i) Cylinders of compressed gas shall be classified in storage as "filled" or "empty." "Empty" cylinders are cylinders that have been certified to be empty of residual pressure or those that have been expended but still contain residual pressure. All empty cylinders that have been certified to be void of residual pressure are to be labeled "Empty." Filled and empty cylinders shall be separated. The cylinders shall be further separated according to compatibility and type. Incompatible materials include oxygen, which shall be stored 100 feet from acetylene or hydrogen unless separated by an approved firewall.

(ii) If a valve leak is discovered, the valve shall be closed immediately. If the leak continues after the valve is closed, the cylinder shall be moved to an outside area, and the appropriate safety officials shall be notified. If the gas is toxic or flammable, it shall be isolated in an area away from buildings and public roads. Open flames shall not be used to test for leaks in compressed-gas cylinders.

(iii) Flame- or spark-producing items shall not be used within 50 feet of storage areas for compressed gas. Cylinders of compressed gas shall not be allowed to come in contact with fire, sparks, or electrical circuits.

**(4) Pesticides**

Pesticides shall be stored in accordance with the general requirements of Sections 3-6.5.3(a) and (b)(1). Discarded pesticides and pesticide residues shall be considered hazardous wastes according to Section 3-6.5.6(c) for the purposes of storage.

**(5) Medical Waste**

In addition to the general requirements of Section 3-6.5.3(a) medical waste, as defined in Section 3-6.5.6(d)(2), intended for disposal shall be securely stored in a locked area under the control of the Commander, USAKA.

**(6) PCBs and PCB Items**

In addition to the general requirements in Sections 3-6.5.3(a) and (b)(1), the following special provisions apply to the storage of PCBs .

(i) No item of movable equipment used for handling PCBs and PCB items in the storage facilities that comes in direct contact with PCBs shall be removed from the area of the storage facility unless it has been decontaminated as specified in the description of appropriate decontamination requirements.

(ii) All containers used for storing liquid PCBs shall comply with the following shipping- container specifications of USDOT: 49 CFR 178.80 (Specification 5, container without removable head), 178.82 (Specification 5B, container without removable head), 178.102 (Specification 6D, overpack, with Specification 2S, 178.35) or 2SL (178.35a, polyethylene containers) of 178.116 (Specification 17E, container). All containers used for storing nonliquid PCBs shall comply with the specifications of 49 CFR 178.80 (Specification 5, container), 178.82 (Specification 5B, container), or 178.115 (Specification 17C, container). As an alternative, containers larger than those specified in USDOT specifications 5, 5B, or 17C may be used for nonliquid PCBs if the containers are designed and constructed in a way that will provide as much protection against leaking and exposure to the environment and are of the same relative strength and durability as the USDOT-specification containers.

(iii) Storage containers for liquid PCBs can be larger than the containers specified in Section 3-6.5.3(b)(6)(vii), above, if the containers are designed, constructed, and operated in compliance with U.S. OSHA Standards, 29 CFR 1910.106, "Flammable and Combustible Liquids." Before the containers are used for storing PCBs, the design of the containers must be reviewed to determine the effect that placing liquids with the specific gravity of PCBs in the containers, as defined in 29 CFR 1910.106(b)(1)(i)(f), has on the structural safety of the containers.

(iv) The date on which the PCB articles and PCB containers are placed in storage shall be marked on the exterior of the articles and containers. The storage shall be managed so that the PCB articles and PCB containers can be located according to the date they entered storage. The record shall also include the date, quantity, and disposition of all batches of PCBs added to or removed from the container.

(v) Secondary containment sufficient to contain twice the volume of the largest container being used or 25 percent of the total volume of PCB and PCB items being stored, whichever is greater, is required.

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### **3-6.5.4 Use and Operation**

#### **(a) General Requirements**

(1) All materials imported to USAKA shall be used only for the purposes for which they were imported and in accordance with the specific use instructions for the substance.

(2) Distribution from central storage facilities of materials intended for general sale on USAKA or for distribution to USAKA residents shall be limited to the quantities necessary for maintaining immediate stocks at sales outlets or distribution centers. No hazardous materials or petroleum products imported or introduced into the RMI for use by USAKA operations shall be distributed or sold by any person at USAKA to any person outside of USAKA within the RMI unless an authorization has been received from the Commander, USAKA, who shall have consulted with the Chairman of RMIEPA.

(3) Persons using HMWPP shall be trained in the proper use of the substance, as required in Sections 2-10 and 3-6.5.1(d).

(4) All persons handling HMWPP shall follow procedures to insure personal safety and protection, such as wearing appropriate personal protective equipment and working in pairs. All persons handling hazardous waste shall, at a minimum, work in pairs.

#### **(b) Hazardous Materials and Petroleum Products**

##### **(1) Hazardous Materials**

(i) No hazardous materials shall be used without an MSDS being readily available. Supervisors shall inform workers about the dangers, precautions for use, and allowable disposal methods for the product.

(ii) Supervisors shall ensure that suitable protective gear as described in Section 3-6.5.3(a)(9)(iv) shall be used at all times to prevent exposure of workers to hazardous materials.

(iii) Provisions shall be made to ensure that workers handling hazardous materials are decontaminated before they leave the work area.

(iv) All hazardous materials shall be used in accordance with the requirements of the hazardous materials management plan (Section 3-6.4.2).

##### **(2) Petroleum Products**

(i) All aboveground valves and pipelines shall be examined weekly by operating personnel as required by Section 3-6.5.3(a)(6). During the examination, the general condition of items such as flange joints, expansion joints, valve glands and

**[3-6.5.4(b)]**

bodies, catch pans, pipeline supports, locking mechanisms of valves, and metal surfaces shall be assessed. In addition, annual pressure testing of valves and pipelines shall be conducted for areas where facility drainage does not comply with the requirements of Section 3-6.5.3(a)(9).

(ii) Catchment basins or diversion structures may be necessary for intercepting and containing spills of petroleum products.

(iii) Spill containment equipment shall be readily available for all fuel transfers. For fuel transfers greater than 500 gallons from shore to vessel and greater than 10,000 gallons from vessel to shore, and for land operations greater than 250 gallons, containment devices shall be in place prior to fuel transfer.

(iv) Site and facility emergency coordinators [Section 3-6.4.1(b)(iii)] shall be apprised of the date, time, and location of major fuel- transfer operations (greater than 500 gallons shore to vessel, greater than 10,000 gallons vessel to shore, and greater than 250 gallons for land operations) so that adequate response personnel and equipment can be on hand.

**(c) Special Requirements**

**(1) Compressed Gases**

For the purposes of the Standards, compressed gases are considered hazardous materials and shall be used in accordance with the requirements of Sections 3-6.5.4(a) and (b)(1).

**(2) Pesticides**

For purposes of these Standards, pesticides are considered hazardous materials and shall be used in accordance with the requirements of Sections 3-6.5.4(a) and (b)(1). Except as may be allowed under Section 3-6.5.4(c)(iii), all pesticides shall be used in accordance with their USEPA registration and labeled uses.

**(i) Distribution**

(A) No general-use pesticide products shall be repackaged before distribution.

(B) No restricted-use pesticide products shall be distributed or sold to any person who does not possess a valid current certification as a commercial applicator as required by Section 3-6.5.4(c)(2)(ii) and authorization from the Commander, USAKA, for using the product.

(C) All applications of pesticides shall be planned to reduce or eliminate disposal of mixed chemicals. All persons engaged in the distribution or sale of restricted-use pesticide products shall maintain for a period of not less than five years records of

receipt and of sale or distribution of restricted-use pesticide products. Such records shall include:

- (aa) Upon receipt of a restricted-use product, a record of:
  - (I) The brand name, the registration number, and the number of containers.
  - (II) The net weight or volume of each container and the type of container.
  - (III) The name and address of the person from whom the product was purchased or received.
  - (IV) The date of receipt.
- (bb) Upon distribution of a restricted-use pesticide product, a record of:
  - (I) The name, address, and certification number of the person purchasing or receiving the product.
  - (II) The date of distribution.
  - (III) The brand name, the registration number, and the quantity of the product sold or distributed.
  - (IV) A description of the container in which the product was received.
  - (V) The signatures of the person distributing the product and the person receiving the product.

(ii) Certification of Pesticide Applicators

(A) All persons who use restricted-use pesticide products on USAKA shall possess valid and current-commercial applicator certifications for the intended uses or shall be under the direct supervision of a certified commercial applicator.

(B) Applicator certifications that are issued by RMIEPA or USDOD are valid for USAKA if the standards of certification are no less rigorous than those specified in 40 CFR 171.3 through 171.6.

(C) The Commander, USAKA, in consultation with the Chairman of RMIEPA, may accept applicator certifications issued by others if the certification represents a demonstration of competence comparable to that demonstrated by either an RMIEPA or a USDOD certification.



(D) The Commander, USAKA, may suspend for purposes of acceptance on USAKA the certification of any applicator upon determining that the applicator has violated any of the standards or procedures for using pesticides, has furnished false or misleading information about the validity of the certification, or has failed to demonstrate a level of competence that is commensurate with the certification. The Commander, USAKA, shall notify the Appropriate Agencies of all such suspensions and of all reinstatements of certifications within five days of taking the action as specified in Section 2-7.2.1(h)(iv).

(iii) Exceptions

(A) Specific, Quarantine and Public Health Exceptions

In emergency situations, use of pesticides that is not in conformance with their registered and labeled uses may be allowed if documented in a final DEP. The Commander, USAKA may seek such an exception by submitting an NPA to the Appropriate Agencies that provides the information and justifications described in 40CFR166.20 and the relevant information required by Section 2-17.3.2. Any DEPs for such an exception shall not be in effect for more than three years and include a provision that enables an appropriate agency to revoke their agreement with the DEP upon determining that: an emergency no longer exists; unreasonable adverse effects are present or potential; the excepted use is not effective; or use of pesticide in the United States or RMI has been suspended or cancelled. Any such revocation shall be effective upon notification by the appropriate agency to USAKA.

(B) Crisis Exception

The Commander, USAKA may authorize a crisis exception allowing the use of pesticides not in conformance with their registration and labeled uses upon determining that a crisis situation exists and there is insufficient time to obtain an exception under Section 3-6.5.4(c)(2)(iii)(A) above. No such exception may be granted if the use of the pesticide in the United States has been suspended or cancelled by USEPA or the pesticide contains an active ingredient that is not registered by USEPA. The Commander, USAKA shall notify the Appropriate Agencies no less than 36 hours prior to authorizing a crisis exception and shall not authorize the exception if an appropriate agency objects to the exception. The Commander, USAKA shall describe the nature of the crisis, the chemicals to be used, and the nature and extent of usage. A crisis exception shall not be authorized for more than 15 days unless an NPA has been submitted under Section 3-6.5.4(c)(2)(iii)(A) above. At the conclusion of the crisis exception the Commander, USAKA shall submit a report to the Appropriate Agencies in accordance with Section 2-7.1.6(g) describing the actions taken under the exception, the results and any environmental or public health effects.

## (3) PCB Materials

(i) For the areas that contain PCBs, the following minimum information shall be submitted to the Commander, USAKA, and to emergency-response personnel and shall be included in the KEEP (Section 3-6.4.1). The requirements of Section 3-6.5.1(c)(2) regarding the inventory of PCBs will be met through the annual updating of the following information.

(A) The location of the items containing PCBs (address of building and location on building site or location of outdoor substation).

(B) The principal constituent of the dielectric fluid in the PCB item (e.g., PCBs, mineral oil, silicone oil).

(C) The name and telephone number of the person to contact in case of a fire involving the equipment.

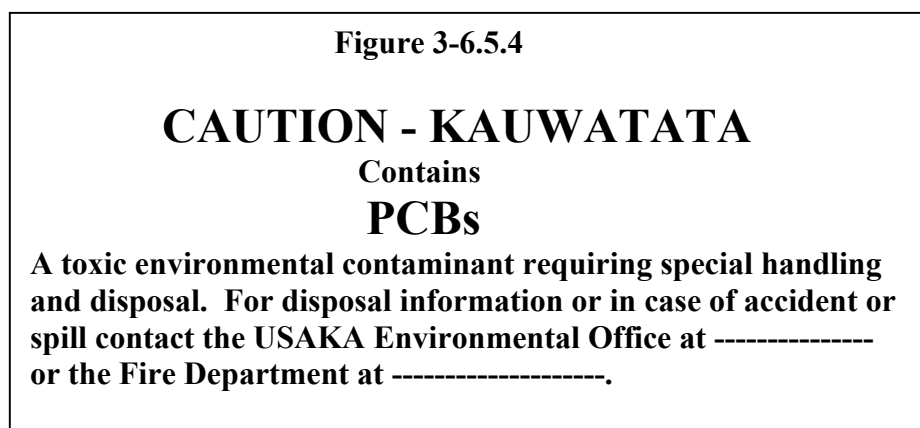
(D) The identification number of the PCB item(s).

(E) The general condition of the item.

(F) The date of manufacture and the date the item was placed in service or removed from service.

## (ii) Labeling

(A) Each of the items listed below shall be marked as illustrated in Figure 3-6.5.4. The size of the marking shall be at least 6 inches square or, if the item cannot accommodate a label of that size, the label shall be sized appropriately.



(aa) PCB containers.

(bb) PCB transformers and PCB large high-voltage capacitors and

equipment containing them at the time of removal from use if not already marked.

- (cc) PCB large low-voltage capacitors at the time of removal from use.
- (dd) Electric motors using PCB coolants.
- (ee) Hydraulic systems using PCB hydraulic fluid.
- (ff) Heat-transfer systems (other than PCB transformers) using PCBs.
- (gg) Containers of PCB articles or equipment containing any of the items listed above in Section 3-6.5.4(c)(3)(ii)(A)(aa) through (ff) above.
- (hh) Each storage area used to store PCBs and PCB items for disposal.

(C) If one or more PCB articles are installed in a protected location, such as on a power pole, a structure, a vault or behind a fence, the pole, structure, door or fence shall be marked in accordance with Section 3-6.5.4(c)(3)(ii)(A) above and a record or procedure identifying the PCB articles shall be maintained by the operator of the protected facility.

(D) All marks required by Sections 3-6.5.4(c)(3)(ii)(A) through (C) shall be placed in a position on the exterior of the PCB item or the transport vehicle so that the marks can be read easily by anyone inspecting or servicing the marked PCB items or the transport vehicles and by emergency-response personnel fighting a fire involving the equipment.

(iii) Use of PCBs and PCB Equipment

(A) No new PCB equipment shall be placed in service at USAKA. Any PCB equipment in service may remain in service for the remainder of its useful life, at which time it shall be collected and disposed of in accordance with Sections 3-6.5.5 and 3-6.5.7. PCB equipment that has not reached the end of its useful life and contains dielectric fluid of less than 50ppm PCB may be converted to non-PCB equipment by replacement of dielectric fluid with fluid not containing PCBs (i.e., retro-filling). All PCB containing dielectric fluids removed are PCB waste and subject to these Standards as such.

(B) All radial PCB transformers in or near buildings that are in service shall be equipped with the following electrical protection to prevent transformer ruptures caused by high-current faults.

(aa) Current-limiting fuses or other equivalent technology shall be used to detect sustained high-current faults and to provide for complete deenergizing of the transformer (within several hundredths of a second) before the transformer ruptures. The installation, setting, and maintenance of current-limiting fuses or other equivalent

technology to prevent transformer ruptures caused by sustained high-current faults shall be completed in accordance with good engineering practices.

(bb) All radial PCB transformers having secondary voltages of 480 volts and above, including 480/227 volt systems, also shall be equipped with protection to prevent transformer ruptures caused by sustained low-current faults.

(C) Combustible materials, including but not limited to, paints, solvents, plastics, paper and construction wood, shall not be stored within a PCB equipment enclosure (i.e., in a transformer vault or in a partitioned area housing a transformer); within 5 meters of a transformer enclosure; or, if unenclosed (unpartitioned), within 5 meters of a PCB transformer.

(D) Each PCB transformer or capacitor or PCB contaminated electrical equipment in use shall be inspected visually at least once every three months. The inspections may take place at any time during the three-month periods (January-March, April-June, July-September, and October-December), as long as there are at least 30 days between inspections. The visual inspection shall include investigation for all leaks of dielectric fluid on or around the transformer. The extent of the visual inspections depends on the physical constraints of each transformer installation and should not require an electrical shutdown of the transformer being inspected.

(E) If a leak found in PCB equipment results in any quantity of PCBs running off or being about to run off the external surface of the equipment, the equipment shall be repaired or replaced to eliminate the source of the leak. Repairs of the internal structure of the equipment however, are prohibited. In all cases, all leaking material shall be cleaned up and disposed of in accordance with the requirements of the KEEP (Section 3-6.4.1) for cleaning up PCB spills. Cleanup of the released PCBs shall begin as soon as possible and in no case later than 48 hours after discovery of the leak. Until appropriate action is completed, all active leaks of PCBs shall be contained to prevent exposure of humans or the environment and shall be inspected daily to verify containment of the leak. Trenches, dikes, buckets, and pans are examples of proper containment. All unrepairable leaking PCB equipment shall be removed from service as soon as possible and in no event longer than 180 days after discovery of the leak.

(F) If PCB equipment is involved in a fire-related incident, the operator of the equipment shall immediately report the incident to the OSC and site and facility emergency coordinators, as specified in the KEEP (Section 3-6.4.1). A fire-related incident is defined as an incident involving PCB equipment that results in the generation of sufficient heat or pressure by any source to cause a rupture of the PCB equipment and the release of PCBs. Information shall be furnished on the type of PCB equipment, installation involved in the fire-related incident (i.e., high or low secondary voltage network transformer, high or low secondary voltage simple radial system, expanded radial system, primary selective system, primary loop system, or secondary selective system or other systems) and on the readily ascertainable cause of the fire-related incident (e.g., high-current fault in the primary or secondary or low-current fault in the

[3-6.5.4(c)]

secondary). The operator of the PCB equipment shall take measures to contain and control all potential releases of PCBs and incomplete combustion products into water as soon as practical and safe. The measures include but are not limited to:

- (aa) Blocking all floor drains in the vicinity of the transformer.
- (bb) Containing water runoff.
- (cc) Controlling and treating (before release) all water used in subsequent cleanup operations.

(G) PCB Use in Heat-Transfer and Hydraulic Systems

Existing heat-transfer and hydraulic systems, other than those that are totally enclosed, with a PCB concentration level of less than 50 ppm, may continue in service provided that the following requirements are met:

(aa) Each operator of a heat-transfer or hydraulic system that ever contained PCBs at concentrations above 50 ppm PCB shall test for the concentration of PCBs in the heat-transfer or hydraulic fluid of such a system at least annually. All test sampling shall be performed at least three months after the most recent fluid refilling. When a test shows that the PCB concentration is less than 50 ppm, testing for complying with this paragraph is no longer required.

(bb) Within six months of a test performed according to Section 3-6.5.4(c)(3)(iii)(G)(aa) above, that indicates that a system's fluid contains 50 ppm or more PCB (0.005 percent dry weight), the system shall be drained of the PCB fluid and refilled with fluid not containing PCBs. "Topping-off" with heat-transfer fluids not containing PCB is permitted.

(cc) Data obtained as a result of Section 3-6.5.4(c)(3)(iii)(G)(aa) shall be retained by the operator of the heat-transfer or hydraulic system for five years.

(H) Decontamination of PCB Containers and Storage Equipment

(aa) All PCB containers to be decontaminated shall be decontaminated by flushing the internal surfaces of the container three times with a solvent not containing PCBs. The solubility of PCBs in the solvent must be five percent or more by weight. Each rinse shall use a volume of the normal diluent equal to approximately 10 percent of the capacity of the PCB container. The solvent may be reused for decontamination until it contains 50 ppm PCB. The solvent and all nonliquid PCBs resulting from the decontamination process shall be disposed of as a PCB fluid in accordance with Section 3-6.5.7(c)(4).

(bb) Movable storage equipment used in PCB-storage areas shall be decontaminated by swabbing surfaces that have contacted PCBs with a solvent meeting the criteria of Section 3-6.5.4(c)(3)(iii)(H)(aa) above.

(4) Asbestos Materials

(i) Materials containing asbestos shall be used and maintained in compliance with the provisions of the hazardous material management plan (Section 3-6.4.2). At a minimum, the plan shall include the following information on materials containing asbestos:

- (A) The location of the areas that contain friable asbestos.
- (B) The type of asbestos-containing material.
- (C) The condition of the material.
- (D) The relative amount of the material (e.g., linear feet, square feet).

(ii) The asbestos labeling.

All areas containing asbestos shall be marked with a bilingual asbestos-identification label in English and Marshallese specifying the potential asbestos hazard, as follows:

CAUTION: ASBESTOS; HAZARDOUS. DO  
NOT DISTURB WITHOUT PROPER  
TRAINING AND EQUIPMENT.

(iii) Asbestos abatement project

(A) USAKA shall ensure that no person is exposed to an airborne concentration in excess of the permissible exposure limit (PEL), consistent with 40 CFR 763.121(c).

(B) On work sites requiring establishment of a regulated area, USAKA shall inform other personnel on the site consistent with 40 CFR 763.121(d).

(C) In work areas where airborne concentrations of asbestos exceed the PEL, USAKA shall establish a regulated area consistent with 40 CFR 763.121(e).

(D) Exposure monitoring during asbestos-abatement projects shall be carried out consistent with the requirements of 40 CFR 761.121(f).

[3-6.5.4(c)]

(E) USAKA shall adhere to the engineering controls, work practices, and prohibitions of 40 CFR 763.121(g) to achieve compliance with the PEL.

(F) USAKA shall supply respirators and ensure that they are used as specified in 40 CFR 763.121(h).

(G) USAKA shall supply, and require the use of, protective clothing for all personnel exposed to airborne concentrations of asbestos that exceed the PEL, consistent with 40 CFR 763.121(i).

(H) USAKA shall provide hygiene facilities and adhere to decontamination practices consistent with 40 CFR 763.121(j).

(I) Communication of asbestos hazards to personnel during abatement projects shall be carried out consistent with the requirements of 40 CFR 763.121(k)(1) and (2).

(J) USAKA shall conform to the housekeeping methods and the requirements for asbestos waste disposal of Section 3-6.5.4(c)(4) and 40 CFR 763.121(l).

(K) Medical surveillance of personnel engaged in asbestos-abatement projects shall be conducted consistent with the requirements of 40 CFR 763.121(m).

(L) The requirements of appendices A, C, D, and E of 40 CFR 763.121, *EPA/OSHA Reference Method, Qualitative and Quantitative Fit Testing Procedures, Medical Questionnaires*, and *Interpretation and Classification of Chest Roentgenograms*, respectively, are required for asbestos-abatement activities and are hereby incorporated by reference.

### 3-6.5.5 Collection of Wastes

#### (a) Collection of General Solid Waste

(1) Household wastes and solid wastes from commercial or industrial sources that are not hazardous waste(s) (i.e., general solid waste) shall be transported to disposal facilities at least twice a week in accordance with the collection requirements as specified below:

(i) Collection shall be carried out at a frequency that is sufficient to prevent or minimize the presence of vectors. For the purposes of Section 3-6.5.5, a vector is defined as an insect or other organism that transmits a pathogenic fungus, virus, or bacterium, etc. Vector control practices shall include:

(A) A certified pesticide applicator shall inspect and, as necessary, treat collection and storage facilities at least once per month or more frequently if deemed necessary by the Commander, USAKA

(B) Documentation of the types of vectors observed and methods of treatment shall be retained for at least three years.

(ii) Collection shall be performed using containers that are compatible with the materials to be collected and the containers shall be protected against climatic conditions that may lead to loss of the container's integrity.

(iii) Scavenging shall not be allowed.

(iv) All wastes shall be collected and contained in such a way that they do not constitute a fire, health, or safety hazard or provide food for vectors.

(v) Containers shall be kept clean so that they do not constitute a nuisance and to retard shelter, feeding, and breeding of vectors.

(vi) All containers of wastes identified in Section 3-6.5.5 shall be labeled for contents before collection begins.

(vii) Generators shall store all materials in a way that protects public health and safety and the environment.

#### (b) Collection of Hazardous Waste and Waste Petroleum Products

(1) Generators of hazardous wastes or waste petroleum products may accumulate up to 55 gallons of total waste, 1 quart of a acutely hazardous waste listed in Table 3-6B.2(c)(5), or 10% of the reportable quantity (Table 3-6C) of a waste material, whichever is lesser in containers that remain at or near the point of waste generation.



**[3-6.5.5(b)]**

(2) A generator who accumulates either hazardous wastes or waste petroleum products shall:

- (i) Comply with Section 3-6.5.5(a)(1)(ii) to ensure the integrity of the containers.
- (ii) Provide, if the container is not in good condition and if it begins to leak or has the potential to leak (e.g., will not seal), other compatible containers for transferring materials or otherwise manage the leak in compliance with Section 3-6.5.3.
- (iii) Ensure that containers of hazardous waste are closed during collection and storage except when wastes are added or removed, as required by Section 3-6.5.3(a)(5).
- (iv) Mark the containers with the words "Hazardous Waste" in English and Marshallese or with other words that bilingually identify the contents of the containers adequately for proper management.

(3) A generator who accumulates hazardous waste or waste petroleum products in amounts exceeding those listed in Section 3-6.5.5(a)(2)(i) shall within 12 hours place the waste in an approved staging and temporary storage area that meets the requirements of Section 3-6.5.3.

(4) Commingling of incompatible wastes or a listed with a characteristic waste is prohibited. Mixing one waste with another may increase the amount of hazardous waste to be handled or may result in heat or pressure; fire or explosion; violent reaction; toxic dusts, mists, fumes, or gases; or flammable fumes or gases. Appendix 3-6D discusses examples of potentially incompatible wastes.

(5) Residues of Hazardous Wastes in Containers

(i) Hazardous waste remaining either in an empty container or in an inner liner removed from an empty container, as defined below in Sections 3-6.5.5(a)(2)(v)(C) through (E), below, is not subject to the hazardous waste requirements of these Standards.

(ii) All hazardous waste either in a container that is not empty or in an inner liner removed from a container that is not empty is subject to these Standards.

(iii) A container or an inner liner removed from a container that has held hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in Appendix 3-6B.2(c)(1) through (4) and in Table 3-6B.2(c)(5), is empty if:

(A) All wastes have been removed that can be removed by using the common practices for removing materials from that type of container (i.e., pouring, pumping, and aspirating), and no more than 2.5 centimeters (1 inch) of residue remains on the bottom of the container or inner liner; or

(B) No more than 3 percent by weight of the total capacity of the container remains in the container or the inner liner if the container is 110 gallons, or less; or

(C) No more than 0.3 percent by weight of the total capacity of the container remains in the container or the inner liner if the container is larger than 110 gallons.

(iv) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric pressure.

(v) A container or an inner liner removed from a container that has held an acute hazardous waste is empty if:

(A) The container or inner liner has been triple-rinsed with a solvent capable of removing the commercial chemical product or the manufacturing chemical intermediate (a chemical used in manufacturing a commercial chemical product); or

(B) The container or the inner liner has been cleaned by another method that has been shown in the scientific literature, or in tests conducted by the generator, to achieve an equivalent level of removal; or

(C) In the case of a container, the inner liner that prevented the commercial chemical product or the manufacturing chemical intermediate from contacting the container has been removed.

(c) Compressed-Gas and Gas Cylinders

For purposes of this section, cylinders and vessels containing compressed air only are not subject to the following provisions.

(1) Discarded or empty compressed gas cylinders shall be collected and placed in a storage facility meeting the requirements of Section 3-6.5.3(b)(3) or disposed of in accordance with Section 3-6.5.7(c)(1)(i).

(2) Cylinders of unknown contents shall be collected, handled and stored as though they are hazardous waste. The contents of the cylinder shall be determined using industry standards and other means as soon as practicable after discovery of the cylinder.

(d) Pesticide Collection

(1) Discarded pesticides and expired pesticide chemicals shall be and collected in accordance with the requirements of Section 3-6.5.5(b) above. Discarded or unused pesticides and pesticide containers of unknown type shall be considered as acutely hazardous waste [Table 3-6B.2(c)(5)] and handled accordingly.

[3-6.5.5(e)]

(2) Pesticide containers are considered hazardous waste unless they are: empty in accordance with Section 3-6.5.5(b)(5), handled in accordance with the manufacturer's labeling instructions, and rendered unusable by puncturing or other alteration

(e) Collection of Regulated Medical Waste

(1) All persons who generate or store RMW, as characterized in Section 3-6.5.6(d)(2), before treatment, disposal, or transport off the site shall comply with the following general requirements for collection:

(i) Carts used to transport regulated medical waste (RMW) shall be constructed of readily cleanable material, plastic, or stainless steel. Carts shall be closed except when being filled or emptied.

(ii) Carts and all other reusable containers for collecting RMW shall be cleaned weekly or more frequently as needed, using a hospital-grade detergent-disinfectant that acts as a mycobacteriacide. The detergent-disinfectant shall be used in strict accordance with the manufacturer's instructions. If a spill occurs, the cart or container and all contaminated surfaces shall be cleaned immediately with a hospital-grade detergent-disinfectant.

(iii) The RMW shall be collected in a way that maintains the integrity of the packaging and in a location that provides protection from weather, animals, and vectors; unauthorized access; and unintentional contact.

(iv) During collection, the RMW shall be segregated from general wastes at its point of origin and shall be placed in containers so that there is a secure barrier between the waste and the workers.

(v) The RMW shall be maintained in a nonputrescent state at all times throughout collection; refrigeration shall be used if necessary.

(vi) All RMW containers shall be marked with the universal biohazard symbol shown in Figure 3-6.5.5.

(vii) All RMW containers shall be sized according to the activity and shall accommodate no more than a 1-day amount of RMW.

(viii) When RMW bags are being sealed, they shall not be shaken or squeezed in an attempt to reduce volume. Compaction before treatment is not authorized.

(ix) Sealed bags shall be carried by the necks to the transportation cart. Bags shall not be lifted or held by the bottom or sides, and the bags shall be held away from the body.

**Figure 3-6.5.5  
BIOHAZARD SYMBOL**



(2) For RMW Classes 4 and 7: All "sharps" [syringes, needles, knives, scalpel blades, tubes, pipettes, etc.; see Section 3-6.5.6(d)(2)(iv)] shall be discarded directly into a rigid leakproof, puncture-resistant, unbreakable container immediately after use. Disposable needles and syringes shall be discarded intact and shall not be cut, broken, bent by hand, or recapped. The containers for sharps shall be designed to prevent unauthorized removal or access and shall be located as close as practical to the area of use. The containers shall be sealed when they are 3/4 full.

(3) For RMW Classes 1, 2, 3, and 5: Unless otherwise specified by the veterinary officer, animal wastes shall be placed inside a rigid RMW container lined with a plastic RMW bag that is at least 0.003 inches (3 mils) thick or shall be double-bagged in RMW bags.

(4) For RMW Class 6: RMWs generated by patients undergoing treatment for Risk Group IV diseases shall be collected in accordance with the specific procedures developed by the health care facility's infection-control officer.

(f) Collection of PCBs

PCB waste are a hazardous waste and subject to the requirements of 3-6.5.5(b) above in addition to the following:

(1) When a PCB transformer or other PCB item has been removed from service (e.g., service wiring has been disconnected or service to the transformer has been discontinued) the transformer or item shall be removed from its site, stored in accordance with the requirements of Section 3-6.5.3 within 12 hours of removal from service, regardless of the amount of PCBs.

(2) All best management practices shall be taken to prevent discharges to the environment from collection points.

**[3-6.5.5(g)]**

(3) All toxic substances stored outdoors shall be protected against climatic conditions that may lead to discharge of materials or that may otherwise contaminate the environment.

**(g) Collection of Asbestos Wastes**

Asbestos-containing materials intended for storage or shipment to the United States shall be collected as specified in Section 3-6.5.5(b), above, and as follows:

(1) The material shall be wet sufficiently that it is wet to the touch and shall be placed in double polyethylene bags labeled in accordance with Section 3-6.5.4(c)(4).

(2) The double bags then shall be placed in a polyethylene-lined container.

(3) The labels then shall be placed over the top of the polyethylene liners.

(4) The lid shall be placed on top of the container.

(5) The container shall be sealed.

(6) The number of bags shall be marked on the exterior of the container.

(7) Labels shall be placed on the exterior of the container.

**(h) Recycling**

**(1) General Requirements for Recycling**

All collected wastes shall be evaluated for reuse or recycling to minimize the quantities of materials to be disposed of at USAKA. USAKA shall take all reasonable measures to maximize recycling of materials and waste. USAKA shall insure that all materials identified as recoverable resources are stored in a way that prevents contamination of the surrounding environment and complies with the applicable requirements of Section 3-6.5.3.

**(2) Waste Petroleum Products**

Waste petroleum products may be collected for energy recovery provided they meet the specifications given in Table 3-6.5.7, have not been mixed with other waste types, and are stored in compliance with Section 3-6.5.3.

**(3) Spent Batteries**

(i) Spent lead-acid batteries shall be collected from each generating source at a frequency that prevents accumulations representing a public safety or environmental hazard.

(ii) Spent lead-acid batteries shall be labeled by date and shall not be accumulated for recycling for longer than six (6) months.

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### 3-6.5.6 Characterization of Wastes

#### (a) General Requirements

All wastes shall be characterized in accordance with 3-6.5.6 as general solid waste and hazardous waste subject to these Standards, or other waste.

#### (b) Solid Waste

All solid waste shall be handled as hazardous waste until identified as not hazardous or is otherwise defined in the following provisions or determined not to be hazardous waste in accordance with Appendix 3-6A. The process for defining solid waste is described in Appendix 3-6A.

##### (1) The following are not considered solid waste:

- (i) Domestic sewage.
- (ii) Point-source discharges of wastewater in compliance with the requirements of a DEP, as cited in Sections 2-17.3 and 3-2.7.1.
- (iii) Secondary materials that are reclaimed and are returned to the original process or processes in which they were generated, where they are reused in the production process, provided that:
  - (A) Only tank storage is involved, and the entire process, through completion of reclamation, is closed (i.e., pipes are completely connected or conveyance is by other comparable enclosed means).
  - (B) Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, and incinerators).
  - (C) Secondary materials are never accumulated in such tanks for more than 12 months without being reclaimed.
  - (D) The reclaimed material is not used to produce a fuel or to produce products that are used in a way that constitutes disposal.
  - (E) Other processes allow reclamation of wastes so that the wastes can be used to produce new or intermediate products or can be part of an intermediate step in producing a product.

##### (2) The following solid wastes are not considered hazardous wastes:

- (i) General solid waste, including household waste that has been collected, transported, stored, treated, disposed of, recovered (e.g., refuse derived fuel), or reused.



**[3-6.5.6(b)]**

A resource-recovery facility managing solid waste shall not be deemed to be storing, treating, disposing of, or otherwise managing hazardous waste as described in Sections 3-6.5.1, 3-6.5.3, and 3-6.5.7, if such a facility:

(A) Receives and burns only general solid waste and solid waste from commercial or industrial sources that does not contain hazardous wastes.

(B) Does not accept hazardous wastes, and the owner or operator of such facility has established contractual requirements or other appropriate notification or inspection procedures to ensure that hazardous wastes are not received at, or burned in, such a facility.

(ii) Fly ash waste, bottom-ash waste, slag waste, and flue-gas emission-control waste generated primarily from the combustion of fossil fuels.

(iii) Construction and demolition waste and other waste and debris that is non-hazardous.

**(c) Hazardous Waste**

The process for defining hazardous waste is described in Appendix 3-6A. Descriptions of the characteristics of hazardous waste and lists of hazardous waste are in Appendix 3-6B. A hazardous waste that accumulates or is generated in a product or raw-material storage tank, a product or raw-material pipeline, a product or raw-material transport vehicle or vessel, or a manufacturing process unit or an associated manufacturing unit that does not treat waste is not subject to these Standards until it leaves the unit in which it was generated, unless the unit is a surface impoundment or unless the hazardous waste remains in the unit for more than 90 days after the unit stops being operated for manufacturing or for storage or transportation of a product or a raw material.

**(d) Special Requirements**

**(1) Samples**

(i) Except as stipulated in Section 3-6.5.6(d)(1)(ii), below, a sample of solid waste or a sample of waste, soil, or air that is collected for the sole purpose of testing to determine its characteristics or composition is not subject to the restrictions on hazardous waste in Section 3-6 under any of the following conditions:

(A) The sample is being transported to a laboratory for testing.

(B) The sample is being transported back to the sample collector after testing.

(C) The sample is being stored by the sample collector before being transported to a laboratory for testing.

(D) The sample is being stored in a laboratory before testing.

(E) The sample is being stored in a laboratory after testing but before being returned to the sample collector.

(F) The sample is being stored temporarily in the laboratory after testing for a specific purpose.

(ii) To qualify for the exception in Section 3-6.5.6(d)(1)(i), a sample collector who is shipping samples to a laboratory and a laboratory that is returning samples to a sample collector shall:

(A) Comply with the requirements of USDOT, the U.S. Postal Service (USPS), the U.S. Department of Agriculture (USDA) and the Department of the Army (DA), as specified in AR 200-1, and with all other applicable shipping requirements.

(B) Comply with the following requirements if the sample collector determines that the shipping requirements of USDOT, USPS, USDA, or other organizations do not apply to the shipment of the sample:

(aa) Ensure that the following information accompanies the sample:

(I) The sample collector's name, mailing address, and telephone number.

(II) The laboratory's name, mailing address, and telephone number.

(III) The quantity of the sample.

(IV) The date of shipment.

(V) A description of the sample.

(bb) Package the sample so that it does not leak, spill, or vaporize from its packaging.

(iii) This exception does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in Section 3-6.5.6(d)(1)(i).

## (2) Regulated Medical Waste

RMW shall be classified in one of the six classes defined below.

(i) Class 1 RMW: Cultures, Stocks, and Vaccines. Cultures and stocks of

[3-6.5.6(d)]

infectious agents and associated biologicals, including cultures from medical and pathological laboratories, discarded live and attenuated vaccines, and culture dishes and devices used to transfer, inoculate, and mix cultures.

(ii) Class 2 RMW: Pathological Waste. Human pathological wastes, including tissues; organs and other body parts; extracted human teeth not returned to patients; body fluids removed during surgery, autopsy, or other medical procedures; and specimens of body fluids.

(iii) Class 3 RMW: Blood and Blood Products. Free-flowing human blood, plasma, serum, and other blood derivatives that are waste. Examples are blood in blood bags; blood and bloody drainage in suction containers; and gauze and bandages that are saturated or dripping with human blood, including such wastes generated during dental procedures. Wastes that are not saturated or dripping should be considered general solid waste, not Class 3 RMW.

(iv) Class 4 RMW and Class 7 RMW: Used and Unused Sharps. Sharps that have been used for animal or human patients or in medical, research, or support laboratories, including hypodermic needles, syringes with or without attached needles, Pasteur pipettes, scalpel blades, blood-collection tubes and vials, test tubes, needles attached to tubing, culture dishes, and other types of broken or unbroken glassware that were in contact with infectious agents.

(v) Class 5 RMW: Animal Wastes. Contaminated animal carcasses, body parts, and bedding of animals that were known to have been exposed to infectious agents during research (including material produced in veterinary facilities), production of biologicals, or testing of pharmaceuticals. Wastes produced by general veterinary practices, euthanized animals, and wastes from animals dying of natural causes are not considered Class 5 RMW.

(vi) Class 6 RMW: Isolation CDC Risk Group IV Wastes. Biological waste and discarded materials contaminated with blood, excretion exudates, or secretions from humans who are isolated to protect others from highly communicable diseases or from isolated animals known to be infected with highly communicable diseases caused by agents designated by the Centers for Disease Control of the United States Public Health Service as Classification 4 in *Classification of Etiologic Agents on the Basis of Hazard*.

(3) Pesticides and Pesticide Residues

Discarded pesticides and pesticide residues, shall be considered hazardous waste under Section 3-6.5.6(c).

### **3-6.5.7 Treatment and Disposal**

#### **(a) General Requirements**

(1) USAKA shall not treat, dispose of or otherwise handle hazardous wastes in a way that makes them nonhazardous except as may be documented in a DEP completed in accordance with Section 2-17.3 or as specifically allowed for recycling.

(2) Destruction or disposal of munitions (e.g., dynamite, World War II ordnance) shall be conducted for reasons of human safety and as documented in a DEP completed in accordance with Section 2-17.3. Residues from such destruction shall be collected when and where possible and shall be tested for hazardous characteristics.

(3) In situations where World War II ordnance poses an imminent and substantial endangerment to human health or the environment, USAKA may undertake destruction or disposal of the ordnance in a manner that USAKA determines to be appropriate without a DEP. USAKA shall notify the Appropriate Agencies upon determining that an imminent and substantial endangerment exist and provide the Appropriate Agencies with a report on the circumstances and actions taken to mitigate the threat to human health or the environment as soon as practical after mitigating the threat.

(4) General solid wastes shall be disposed of at USAKA only after reuse, recycling, and energy recovery, as discussed in Section 3-6.5.5, have been considered and as documented in a DEP completed in accordance with Section 2-17.3. Acceptable technologies for general solid waste disposal at USAKA include: incineration, land application, and landfilling. Ocean disposal is acceptable only if it is allowed under the provisions of Section 3-5.

#### **(b) Treatment of Hazardous Wastes and Waste Petroleum Products**

(1) Under no circumstances shall hazardous wastes or waste petroleum products generated by activities at USAKA be exported from USAKA to the RMI for treatment or disposal. Disposal of residues of hazardous materials, hazardous waste by-products, and petroleum products and the method of disposal shall be approved by the Commander, USAKA, or by his or her representative before the product is used (Section 3-6.4.3) Hazardous Materials Procedure) and documented in a completed DEP (Section 2-17.3).

(2) All persons generating hazardous waste at USAKA shall be ultimately responsible for its shipment and disposal (i.e., the costs of analysis, shipment, handling, and disposal).

(3) All persons, including individual contractors, creating or having the potential to create more than 1 kilogram of acutely hazardous wastes [Table 3-6B.2(c)(5)] in one calendar month shall advise USAKA and the Appropriate Agencies before creating the waste.

[3-6.5.7(b)]

(4) Except as provided below, recycling of hazardous waste or waste petroleum products at USAKA shall only be undertaken as documented in a DEP completed in accordance with Section 2-17.3. The following recyclable hazardous and petroleum product waste (i.e., recyclable materials) are not subject to this DEP requirement

(i) Recyclable materials used in a manner not constituting disposal.

(ii) Hazardous or petroleum product wastes burned for energy recovery in boilers, industrial furnaces, general solid waste incinerators, and electric generators that are:

(A) Hazardous wastes solely because they possess the characteristic of ignitability as determined by the test for characteristics of hazardous wastes.

(B) Hazardous wastes because the wastes to be burned are a product of mixing in which the hazardous constituent appears in analysis to be insignificant and not to pose a threat to public health and safety and the environment when burned as discussed in Appendix 3-6B.

(iii) Waste petroleum products that exhibit one or more of the characteristics of hazardous waste, but are specification used oil (Table 3-6.5.7) and are burned for energy recovery in boilers, incinerators, and electrical generators.

<b>TABLE 3-6.5.7</b>	
<b>WASTE PETROLEUM PRODUCT SPECIFICATIONS</b>	
<b>Constituent/Property</b>	<b>Allowable Level</b>
Arsenic	$\leq 5$ ppm
Cadmium	$\leq 2$ ppm
Chromium	$\leq 10$ ppm
Lead	$\leq 100$ ppm
Flash Point	$\geq 100^{\circ}$ F
Total Halogen	$\leq 1000$ ppm
PCBs	$\leq 2$ ppm

(iv) Recyclable materials from which precious metals are reclaimed.

(c) Special Requirements

(1) Compressed-Gas and Gas Cylinders

(i) Empty [Sections 3-6.5.3(b)(3)(i) and 3-6.5.5(b)(5)(iv)] compressed gas cylinders or vessels may be disposed of as a general solid waste or debris provided that the valve has been removed or the cylinder or vessel is otherwise open to the atmosphere, and the cylinder or vessel rendered unusable as a liquid container.

(ii) Compressed gas cylinders or vessels not meeting the requirements of Section 3-6.5.7(c)(1)(i) above are hazardous waste and subject to Sections 3-6.5.7(a)(1) and (b)(1).

(2) Pesticides

Discarded pesticides and pesticide residues shall be considered hazardous waste for the purposes of treatment and disposal and shall comply with the provisions of Sections 3-6.5.7(a)(1) and (b)(1).

(3) Regulated Medical Waste

(i) All persons who treat RMW as defined in Section 3-6.5.6(d)(2) must comply with the following general requirements:

(A) Bagged waste shall be handled and moved in ways that prevent spillage or rupture of the containers.

(B) Incineration (Appendix 3-1C) or other alternative technologies, as approved by the Commander, USAKA in consultation with the Appropriate Agencies, shall be used to make the waste nonpathogenic.

(C) Steam or thermal sterilization, when conducted, shall be performed in a unit dedicated to treating RMW. It shall never be performed in a unit used for sterilizing materials for medical procedures.

(ii) Each class of RMW shall be treated as specified below:

(A) Class 1: Cultures, Stocks, and Vaccines. Incineration or other approved disposal technology. Alternatively, liquid Class 1 RMWs may be steam-sterilized or thermally sterilized and discharged to the sanitary sewer. Sterilized solid or nonflowable Class 1 RMWs may be disposed of as general solid waste.

(B) Class 2: Pathological Wastes. Refrigerated or frozen before incineration if not immediately picked up for treatment and disposal. Incineration is the preferred method of destruction for Class 2 RMW. Steam or thermally sterilized Class 2 RMW may be disposed of as general solid waste.

(C) Class 3: Blood and Blood Products. Steam or thermal sterilization or incineration. After sterilization, the products may be discharged to the sanitary sewer if secondary treatment is available.

(D) Class 4 and 7: Sharps. Incineration or other approved alternative technology [Section 3-6.5.7(c)(3)(i)(B)].

[3-6.5.7(c)]

(E) Class 5: Animal Wastes. Refrigerated or frozen before incineration if not immediately picked up for treatment and disposal. Incineration is the preferred method of destruction for Class 5 RMW. Steam or thermally sterilized Class 5 RMW may be disposed of as a general solid waste.

(F) Class 6: Isolation Centers for Disease Control (CDC) Risk Group IV Wastes. Steam or thermal sterilization, incineration, or other approved alternative technology. The chief medical officer shall specify procedures for this waste stream.

(4) PCB Wastes

(i) Treatment of PCB wastes at USAKA is acceptable only if the treatment has been sanctioned by USEPA and has been documented in a DEP completed in accordance with Section 2-17.3.

(ii) Disposal of PCB wastes is prohibited at USAKA.

(5) Asbestos

No later than 180 days after being removed, asbestos wastes shall be transported to the United States for disposal in a landfill approved by USEPA.

(6) Non-hazardous Solid Waste

(i) By January 1, 2004, the Commander, USAKA shall revise and implement the solid waste management plan. The plan shall be reviewed at least every two years thereafter and revised as necessary to remain accurate and current. The revised solid waste management plan shall address the following items and topics. Copies of the revised solid waste management plan and any subsequent revisions to it shall be provided to the Appropriate Agencies.

(A) Waste reduction and minimization: the plan shall present a strategy and schedule of activities to reduce and minimize the generation of solid waste at USAKA.

(B) Recycling: the plan shall present a strategy and schedule of activities to maximize recycling at USAKA.

(C) Reuse: the plan shall present a strategy and schedule of activities to maximize reuse of materials at USAKA.

(D) General Solid Waste Disposal: the plan shall set forth the existing and planned methods of general solid waste disposal at USAKA and specifically address compliance with the requirements of these Standards, including, but not limited to, the requirements set forth in Sections 3-6.5.7(c)(6)(iii) through (vii) below.

(E) Construction and Demolition Waste, Debris, and Hazardous Debris:

The plan shall present the practices that will be utilized to collect, accumulate, store, transport, classify and dispose of these wastes in a manner that is protective of the environment and public safety and compliant with the provisions of these Standards (e.g, Water Quality and Reef Protection, Section 3-2). The plan shall specifically address how hazardous debris will be identified and managed (re: 40CFR268.45).

(ii) Development and operation of new or existing facilities for disposal or composting of general solid waste, including construction of new landfills, extension of existing landfills, installation of liners, leachate management, and closure and postclosure care, shall be documented in a DEP completed in accordance with Section 2-17.3. The NPA or NCA for any such facilities shall include demonstrations that the requirements set forth in Sections 3-6.5.7(c)(6)(iii) through (vii) will be achieved.

(iii) Location Restrictions

(A) All general solid waste landfill or composting operations within 5,000 feet of an aircraft-landing area shall be designed and operated so that they do not cause a hazard to aircraft from birds.

(B) General solid waste landfill or composting operations shall be located in consideration of the following factors to ensure that the integrity of the facility will not be disturbed:

(aa) Site soil conditions that may result in significant differential settling.

(bb) Site geologic or geomorphologic features.

(cc) Man-made site features or events (both surface and subsurface).

(iv) Operating Criteria

(A) General solid waste landfills or composting facilities shall have a program for detecting and preventing the disposal of hazardous wastes characterized in Section 3-6.5.6(c). The program shall include, at a minimum:

(aa) Random inspections of incoming loads, unless other steps are taken to ensure that incoming loads do not contain hazardous wastes defined in Section 3-6.5.6(c).

(bb) Retention and storage of records of all inspections.

(cc) Training of facility personnel as discussed in Section 3-6.5.1(d) to recognize hazardous wastes.

(dd) Notification of the Commander, USAKA, if a hazardous waste is discovered at the facility.



(B) Requirements for Cover Materials

(aa) Except as specified in the following paragraph, all general solid waste landfill facilities shall be covered with six inches of earth at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging.

(bb) Alternative cover materials or an alternative thickness (other than at least six inches of earth) may be approved by the Commander, USAKA, in consultation with the Appropriate Agencies if it is demonstrated that the alternative material or thickness adequately control disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to public health and safety or the environment.

(C) Control of Disease-Bearing Vectors

All general solid waste landfill and composting facilities shall be operated to prevent or control onsite populations of disease vectors by using techniques appropriate for protecting public health and safety and the environment.

(D) Control of Explosive Gases

(aa) General solid waste landfill and composting facilities shall be operated to ensure that the concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane in the facility and does not exceed the lower explosive limit for methane at the boundary of the facility property. For the purposes of this section, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25 degrees centigrade and atmospheric pressure.

(bb) A routine monitoring program for ensuring that the standard for methane above is met shall be implemented. The minimum frequency of monitoring shall be annually; with the detection of methane, monitoring frequency shall be increased to no less than quarterly at the site detected, until such time as methane is not detected for two successive quarters. The type and frequency of monitoring shall be determined on the basis of the following factors:

- (I) Soil conditions.
- (II) The hydrogeologic conditions surrounding the facility.
- (III) The hydraulic conditions surrounding the facility.
- (IV) The location of facility structures and property boundaries.

(cc) If levels of methane gas exceeding the levels specified in Section 3-6.5.7(c)(6)(iv)(D)(aa) above are detected:

(I) All necessary steps to ensure the protection of public health and safety shall be taken and the Commander, USAKA shall be notified.

(II) Within seven days of detection, the levels of methane gas detected and a description of the steps taken to protect public health and safety shall be documented.

(III) Within 60 days of detection, a remediation plan for the methane gas releases shall be developed and implemented and the Commander, USAKA shall be notified. The plan shall describe the nature and extent of the problem and the proposed remedy.

(E) Open Burning of Solid Waste

Refer to standards of Section 3-1.7.1.

(F) Access Requirements

All general solid waste landfill and composting facilities shall be designed and operated to control public access and prevent unauthorized vehicular traffic and illegal dumping of wastes by using artificial barriers or natural barriers, or both, as appropriate to protect public health and safety and the environment.

(G) Run-On and Run-Off Control and Surface Water Requirements

All general solid waste landfill and composting facilities shall be designed, constructed, operated and maintained to control run-on and run-off to prevent flow onto or from the active part of the facility from violating any water quality requirement in Section 3-2.

(H) Restrictions on Liquids

Bulk or liquid waste shall not be placed in a general solid waste landfill unless:

(aa) The waste is a household waste other than septic waste, or

(bb) The waste is not in a storage container, other than small storage containers associated with household solid waste.

(I) Records-Keeping Requirements

All general solid waste landfill and composting facilities shall have an operating record that contains the following information, at a minimum:

(aa) Any demonstrations required under Section 3-6.5.7(c)(6)(iii)(A).

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(bb) Inspection records, training procedures, and notification procedures required under Section 3-6.5.7(c)(6)(iv).

(cc) Gas-monitoring results from monitoring and the remediation plans required by Section 3-6.5.7(c)(6)(iv)(D).

(dd) All demonstrations, certifications, and monitoring, testing, or analytical data required by Section 3-6.5.7(c)(6)(vi).

(ee) Documentation of the closure and postclosure care measures described in the closure/post closure plan [Section 3-6.5.7(c)(6)(vii)].

**(v) Liner Design and Leachate-Collection System**

(A) New landfills or lateral expansions shall be constructed using 2 flexible membrane liners (FML) separated by 18 inches of  $10^{-3}$  permeability sand (or coral sand) or composite drainage nets. The liner system shall be covered with a minimum of 12 inches of sand to prevent damage to the liner during backfilling operations. The base liner shall have a minimum slope of 2 percent.

(B) The leachate-collection system shall be composed of 6-inch pipe of a material that is chemically resistant to the expected leachate and that is designed to handle the anticipated structural loading.

(C) The requirements of (A) and (B) above may be modified or eliminated if USAKA demonstrates through the DEP process that:

(aa) There is no evidence or potential for contaminants originating from the landfill to cause violations of the applicable groundwater standards (Section 3-2.6.1-2) during the active life of the landfill or the postclosure period. This demonstration shall be made by a qualified hydrogeologist and approved by the Commander and shall, among other things, be based upon:

(I) Site-specific, field collected measurements, sampling, and analysis of physical, chemical and biological factors affecting pollutant fate and transport; and

(II) Predictions of contaminant fate and transport that are based upon the maximum possible contaminant migration and effects on the environment, public health and safety.

(bb) There is no evidence or potential for contaminants originating from the landfill to cause violations of the applicable water quality standards (Section 3-2.4.1) during the active life of the landfill or the postclosure period; and/or

(cc) The application of alternative control measures will sure

attainment of the applicable groundwater and water quality standards during the active life of the landfill and the postclosure period and/or the application of alternate monitoring protocols will provide for the detection of contaminants originating from the landfill.

(D) If USAKA obtains knowledge or reason to believe that groundwater contamination is or may occur in amounts above those identified to justify an exception or modification of the requirements of Sections 3-6.5.7(c)(6)(v)(A) and (B), USAKA shall promptly notify the Appropriate Agencies and within 60 days of such notification advise the Appropriate Agencies of USAKA's plan and schedule to address the problem.

(vi) Groundwater Detection and Assessment Monitoring

After January 1, 2002 all NPAs or NCAs for general solid waste landfills shall include a groundwater monitoring system and implementation plan that includes and provides for:

(A) Establishment and documentation of a groundwater monitoring system, including:

(aa) A description of the groundwater-monitoring system that will be implemented and that consists of a sufficient number of wells, installed at appropriate locations and depths, to yield samples of groundwater that will:

(I) Represent the quality of background groundwater quality that has not been affected by the landfill. For the purposes of this section, existing lens wells for a potable-water supply may be used as representative of background groundwater quality.

(II) Represent the quality of groundwater passing the landfill boundary. When physical obstacles preclude installing monitoring wells at the boundary, the monitoring system may be installed at the closest practicable distance hydraulically connected to the point of compliance (landfill boundary).

(III) Provide that monitoring wells will be cased in a way that maintains the integrity of the monitoring-well bore hole. The casing shall be screened or perforated and shall be packed with gravel or sand, where necessary, to permit collection of groundwater samples. The annular space (i.e., the space between the bore hole and the casing) above the sampling depth shall be sealed to prevent contamination of the samples and the groundwater.

(bb) Operation and maintenance of the monitoring system so that it performs to design specifications throughout the life of the monitoring program.

(cc) A description of the procedures for sampling and analysis that will

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be used to ensure that the monitoring results provide an accurate representation of background and landfill-influenced groundwater quality, including procedures and techniques for:

- (I) Sample collection.
- (II) Sample preparation, preservation and shipment.
- (III) Analysis.
- (IV) Chain-of-custody control.
- (V) Quality assurance and quality control.

(B) A description of the detection monitoring program that will be implemented, including:

(aa) The parameters that will be monitored for and, if applicable, a justification for not including all the constituents listed in Appendix I of 40 CFR 258. The criteria that will be used to make any modifications to the monitoring parameters based on monitoring results and other information.

(bb) The monitoring frequency and methodology that will be implemented. If a monitoring frequency of less than semiannual or less than one independent sample from each well is planned, a justification for the decreased frequency and sample number shall be provided.

(cc) The methods that will be used to determine and document if there is a statistically significant increase, as determined by using the statistical procedures referenced in 40CFR258.53(g) and (h), over background levels for one or more of the constituents sampled.

(C) Assessment monitoring program

An assessment monitoring program shall be implemented if a significant increase is observed during detection monitoring (Section 3-6.5.7(c)(vi)(B)(cc) above), unless the Commander, USAKA determines, in consultation with the Appropriate Agencies, that the increase is not attributable to the landfill. The assessment monitoring program shall be initiated within 90 days of determining that a significant increase in constituent levels has occurred that is attributable to the landfill and shall include and provide for:

(aa) Annual monitoring at all monitoring wells in the monitoring system for all constituents identified in Appendix II of 40 CFR 258 and for any detected constituents in Appendix II at wells under the influence of the landfill, at least four independent samples from all wells shall be collected and analyzed to establish background levels. The Commander USAKA, may determine, in consultation with the

Appropriate Agencies, that a subset of Appendix II parameters and monitoring wells may be used for the initial assessment monitoring sampling if those deleted constituents cannot reasonably be expected to originate from the landfill or data from the wells removed from sampling will not be useful.

(bb) After obtaining the results from the initial or subsequent sampling required above:

(I) Within 90 days, and at least semiannually thereafter, resample all wells, conduct analyses for all constituents that were detected during assessment monitoring, and document the results. At least one sample from each well (including background) shall be collected and analyzed.

(II) Establish background concentrations for all constituents detected during assessment monitoring.

(III) Establish standards for groundwater protection for all contaminants detected during assessment monitoring. For constituents for which an MCL has been established (Section 3-3) or a primary or secondary standard as been established (Appendix 3-2D) the applicable standard shall be the MCL, primary standard or secondary standard. For constituents for which no standard is established, the background level shall be the standard. The Commander, USAKA, in consultation with the Appropriate Agencies, may establish alternative standards based upon risk and other human health factors and marine water quality factors.

(cc) If the concentrations of all analyzed constituents are shown to be statistically at or below the standards for groundwater protection (Section 3-6.5.7(c)(6)(vi)(C)(bb)(IV) above) using statistical procedures referenced in 40CFR258.53(g) and (h), the detection monitoring program may resume.

(dd) If one or more of the analyzed constituents are detected at statistically significant levels above the standards for groundwater protection, the Commander, USAKA, OSC and the Appropriate Agencies shall be notified and actions shall be immediately initiated in accordance with Section 3-6.5.8. Assessment monitoring shall continue unless otherwise determined or replaced with alternative assessment procedures determined in accordance with Section 3-6.5.8.

(vii) Closure and Post-Closure Care

(A) Prior to closing a general solid waste landfill USAKA shall prepare and submit to the Appropriate Agencies closure/post closure plan that, at a minimum, includes and provides for:

(aa) Design and installation of a final cover system that will minimize infiltration and erosion.

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(bb) An estimate of the amounts and types of waste contained in the landfill.

(cc) A schedule of activities to design and install the final cover that within one year of closure. The schedule shall include submittal of the final cover design to the Appropriate Agencies and allow for a 30 day comment period.

(dd) Maintenance of the final cover and groundwater monitoring program established in accordance with Section 3-6.5.7(c)(vi) above for a period of 30 years or when the facility is no longer under USAKA's control, whichever is sooner.

(B) USAKA shall provide the Appropriate Agencies no less than 60 days to review the closure/post closure plan and incorporate all comments received, or provide a justification for not incorporating them, into the final closure/post closure plan. The final closure/post closure plan and any subsequent revisions to it shall be provided to the Appropriate Agencies.

**(d) Sewage Sludge and Septage Use and Disposal**

**(1) Use and Disposal Alternatives.**

(i) The standards in this section are intended for sewage sludge and septage that is applied to the land as a soil conditioner and fertilizer. Sewage sludge and septage, which do not meet these standards, must be disposed in a solid waste landfill in accordance with the requirements contained in Section 3-6.5.7(c)(6). Septage may be discharged to a domestic sewage collection system or to a domestic sewage treatment plant only if the pretreatment requirements established by Section 3-2.7.1 and the appropriate point-source discharge DEP requirements are met.

(ii) Grit and screenings must be incinerated or disposed in a solid waste landfill in accordance with the requirements contained in Section 3-6.5.7(c)(6).

(iii) Sludge from oil/water separators and grease traps shall be incinerated or disposed in a solid waste landfill in accordance with the requirements contained in Section 3-6.5.7(c)(6).

(iv) All commercial and industrial wastewater discharges to domestic sewage treatment plants or septic tanks shall be controlled through pollution prevention or pretreatment measures to the extent necessary to ensure that the resultant sewage sludge or septage quality standards for land application in Section 3-6.5.7(d)(3) are met.

(v) Sludge generated during the treatment or storage of drinking water may only be applied to the land if it is mixed with sewage sludge for co-composting following the conditions specified in Section 3-6.5.7(d)(3)(ii)(C) and if it does not exceed the pollutant concentrations listed in Section 3-6.5.7(d)(3)(i).

## (2) Land Application

Sewage sludge and septage which meet the quality standards in Section 3-6.5.7(d)(3) and the management requirements in Section 3-6.5.7(d)(4) may be applied without any human contact restrictions to land areas on all USAKA-leased islands.

## (3) Quality Standards

(i) Pollutant Concentrations. Sewage sludge or septage shall not be applied to the land if the concentration of any pollutant in the sewage sludge or septage exceeds the pollutant concentrations listed in Table 3-6.5.7(d). A representative sample of the sewage sludge and septage shall be tested annually to demonstrate that the pollutant concentrations are not exceeded. Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius until reaching a constant mass (i.e., essentially 100 percent solids content).

<b>Table 3-6.5.7(d)</b> <b>Pollutant Concentrations</b>	
<b>Pollutant</b>	<b>Concentration</b> <b>Dry weight basis (mg/kg)</b>
Arsenic.....	41
Cadmium.....	39
Copper.....	1500
Lead.....	300
Mercury.....	17
Nickel.....	420
Selenium.....	100
Zinc.....	2800

[Based on 40 CFR 503.13(b)(3)]

(ii) Pathogen Reduction. Sewage sludge or septage shall be subjected to one of the treatment processes for pathogen reduction described in Section 3-6.5.7(d)(3)(ii)(A), (B), (C), (D), (E), (F), (G), (H), (I), or (J) prior to applying the sewage sludge or septage to the land. Pathogens are disease-causing organisms which include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

(A) Thermal Treatment. The temperature of the sewage sludge or septage shall be maintained at one specific value for a period of time as determined by one of the following equations in which D = time in days and t = temperature in degrees centigrade.

$$\text{Equation 1} \quad D = 131,700,000 / 10^{0.1400t}$$

$$\text{Equation 2} \quad D = 50,070,000 / 10^{0.1400t}$$

(aa) When the percent solids of the sewage sludge is seven percent or



higher, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 20 minutes or longer; and the temperature and time period shall be determined using equation 1, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

(bb) When the percent solids of the sewage sludge is seven percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 15 seconds or longer; and the temperature and time period shall be determined using equation 1.

(cc) When the percent solids of the sewage sludge is less than seven percent and the time period is at least 15 seconds, but less than 30 minutes, the temperature and time period shall be determined using equation 1.

(dd) When the percent solids of the sewage sludge is less than seven percent; the temperature of the sewage sludge is 50 degrees Celsius or higher; and the time period is 30 minutes or longer, the temperature and time period shall be determined using equation 2.

(B) High pH /High Temperature Treatment. The pH of the sewage sludge or septage shall be raised to above 12 and shall remain above 12 for 72 hours. The temperature of the sewage sludge shall be above 52 degrees Celsius for 12 hours or longer during the period that the pH of the sewage sludge is above 12. At the end of the 72 hour period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

(C) Composting. Using either within-vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge or septage shall be maintained at 55 degrees Celsius or higher for 3 days. Using the windrow composting method, the temperature of the sewage sludge or septage shall be maintained at 55 degrees Celsius or higher for 15 days or longer. During the period when the compost is maintained at 55 degrees Celsius or higher, the windrow shall be turned a minimum of five times.

(D) Heat Drying. Sewage sludge or septage shall be dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge or septage to 10 percent or lower. Either the temperature of the sewage sludge or septage particles shall exceed 80 degrees Celsius or the wet bulb temperature of the gas in contact with the sewage sludge or septage as the sewage sludge or septage leave the dryer shall exceed 80 degrees Celsius.

(E) Heat Treatment. Liquid sewage sludge or septage shall be heated to a temperature of 180 degrees Celsius or higher for 30 minutes.

(F) Thermophilic Aerobic Digestion. Liquid sewage sludge or septage shall be agitated with air or oxygen to maintain aerobic conditions, and the mean cell residence time of the sewage sludge or septage shall be 10 days at 55 degrees to 60 degrees Celsius.

(G) Pasteurization. The temperature of the sewage sludge or septage shall be maintained at 70 degrees Celsius or higher for 30 minutes or longer.

(H) Alternative Treatment Processes. Alternative sewage sludge and septage treatment processes may be used for pathogen reduction if it is demonstrated through testing that the following limits are met at the time that the sewage sludge or septage is applied to the land:

(aa) The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per four grams of total solids (dry weight basis).

(bb) The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis).

(iii) Pathogenic Bacteria Regrowth Monitoring. Sewage sludge or septage, which has received the pathogen reduction treatment specified in Section 3-6.5.7(d)(3)(ii), shall be tested annually at the time the sewage sludge or septage is applied to the land to ensure that either the density of fecal coliform in the sewage sludge or septage shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge or septage shall be less than three Most Probable Number per four grams of total solids (dry weight basis). Sewage sludge or septage which does not meet these criteria shall either receive additional pathogen reduction treatment or shall be disposed in a solid waste landfill in accordance with the requirements contained in Section 3-6.5.7(c)(6).

(iv) Vector Attraction Reduction. Sewage sludge or septage shall meet one of the vector attraction reduction requirements described in Section 3-6.5.7 (d)(3)(iv)(A), (B), (C), (D), (E), (F), (G), or (H) prior to applying the sewage sludge or septage to the land.

(A) The mass of volatile solids in the sewage sludge or septage shall be reduced by a minimum of 38 percent. This reduction shall be calculated using procedures described in "Environmental Regulations and Technology Control of Pathogens and Vector Attraction in Sewage Sludge", EPA-625/R-92/013, 1992, U.S. Environmental Protection Agency.

(B) When the 38 percent volatile solids reduction requirement in Section 3-6.5.7(d)(3)(iv)(A) cannot be met for an anaerobically digested sewage sludge or septage, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 degrees Celsius. When at the end of

[3-6.5.7(d)]

the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.

(C) When the 38 percent volatile solids reduction requirement in Section 3-6.5.7 (d)(3)(iv)(A) cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 degrees Celsius. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction reduction is achieved.

(D) The specific oxygen uptake rate (SOUR) for sewage sludge or septage treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius.

(E) Sewage sludge or septage shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40 degrees Celsius and the average temperature of the sewage sludge shall be higher than 45 degrees Celsius.

(F) The pH of sewage sludge or septage shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then at 11.5 or higher for an additional 22 hours.

(G) The percent solids of sewage sludge or septage that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials.

(H) The percent solids of sewage sludge or septage that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.

(4) Management Practices

(i) Sewage sludge or septage shall not be applied to the land if it is likely to adversely affect species and habitats of special concern listed in Section 3-4; it is likely to enter a wetland or other waters of the RMI; or the land application site is located 10 meters or less from waters of the RMI.

(ii) Sewage sludge and septage shall not be applied to the land at rates greater than the agronomic rate for nitrogen. The agronomic rate is the whole sludge application rate (dry weight basis) that provides the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and minimizes the amount

of nitrogen in the sewage sludge or septage that passes below the root zone of the crop or vegetation grown on the land to the ground water.

(5) Recordkeeping

(i) The following information shall be developed and retained for five years for all sewage sludge or septage; or material derived from sewage sludge or septage that is applied to land areas on USAKA-leased islands.

(A) The concentration of each pollutant, listed in Section 3-6.5.7(d)(3)(i), Table 1, in the sewage sludge or septage.

(B) A description of how the pathogen reduction requirements in Section 3-6.5.7(d)(3)(ii) are met.

(C) The results of the pathogenic bacteria regrowth monitoring required in Section 3-6.5.7(d)(3)(iii).

(D) A description of how the vector attraction reduction requirements in Section 3-6.5.7(d)(3)(iv) are met.

(E) A description of how the management practices in Section 3-6.5.7(d)(4)(i) are met for each site on which sewage sludge or septage; or material derived from sewage sludge or septage is applied.

(F) The agronomic rate determinations and whole sludge application rate measurements which demonstrate that the loading requirement for nitrogen in Section 3-6.5.7(d)(4)(ii) is met for each site on which sewage sludge or septage; or material derived from sewage sludge or septage is applied.

[3-6.5.7(d)]

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### 3-6.5.8 Restoration

The implementation of effective measures to characterize and mitigate the environmental release of potential contamination is facilitated by following a sequential, comprehensive assessment approach. The prescribed approach is described in this Section of text, and is depicted in Figure 3-6.5.8. The process allows for immediate and/or long-term action based on the potential threats/risks posed to human health, safety, or the environment. Each phase shall be overseen/administered by an government official representing USAKA who will ensure that the appropriate technical and administrative actions have been accomplished, and who has authority to commit resources to facilitate successful project completion. The On-Scene Coordinator (OSC) shall fill this role during Phase I and Phase II operations (Discovery, Emergency Response, Removal Action), while a Remedial Project Manager (RPM) shall fulfill this role for Phase III "(Remediation)" activities. Both the OSC and RPM shall maintain responsibility for respective Phase IV activities (Waste Disposal). Actions undertaken pursuant to this Section shall not be subject to equivalent or duplicative procedural requirements specified elsewhere in the Standards. This does not relieve USAKA from meeting substantive requirements contained elsewhere in the Standards.

(a) Phase I – Discovery and Notification.

(1) A discharge or release to the environment may be discovered by:

- (i) Self-reporting by the person(s) in charge of a vessel or facility.
- (ii) Search by investigative or inspection personnel.
- (iii) Random or incidental observation by government or contractor personnel or by the public.
- (iv) Other sources.

(2) Any person in charge of a vessel or facility shall, as soon as he/she has knowledge of a discharge or release, make notification as specified in the KEEP. USAKA, shall establish and maintain an effective communication system to expedite such notice as specified in Section 3-6.4.1(b) (KEEP).

(b) Phase I – Initial Assessment. Upon notification, the OSC shall promptly initiate the response activities outlined in the KEEP, beginning with an initial assessment of the situation. The primary goal of this initial assessment is to gather readily available information regarding the types of materials discharged or released to the environment, the volumes or amount released, the presence/absence of sensitive human or ecological receptors, and the relative hazard posed by the event.

(c) Phase I – Determination if Action is Merited. This is a key decision point, with the appropriate action considered based upon the preliminary information gathered. If the

OSC determines that no further action is warranted (i.e., circumstances are not considered to pose a threat to human health or the environment), a detailed incident report or notice must be developed describing the information accumulated and the rationale for inaction, and submitted to the Appropriate Agencies. Should the choice be unclear, or the available information be incomplete, the OSC shall make the decision to proceed through the emergency response/remediation process. A DEP is not required for activities undertaken as part of an emergency response or removal actions.

(d) Phase I – Evaluation of an Emergency Environmental Condition. The initial data accumulated shall be evaluated to determine whether or not an emergency environmental condition exists which poses an imminent threat to public health and safety or the environment. If the OSC determines that the nature and extent of contamination poses an emergency environmental condition, immediate mitigative action shall be undertaken in consonance with the KEEP (Phase II). This shall take the form of an emergency response. Conversely, should it be determined that such a threat does not exist, yet mitigation still appears requisite, the routine remedial process (Phase III) shall be initiated.

(e) Phase II – Emergency Response. If the OSC determines that an emergency environmental condition exists, emergency response actions will be initiated in accordance with the KEEP and established operational procedures. The primary goals of the response are to stabilize the material(s) released and to preclude/minimize exposure to potential human and ecological receptors. Emergency notification, per Section 2-7.3.1 shall be accomplished. The OSC will also notify residents and employees when it is safe to re-enter and resume normal operations within an affected area.

(f) Phase II – Necessity of Further Mitigation. At the conclusion of emergency response activities, the OSC shall determine if the actions already accomplished have been sufficient to eliminate any further risk or hazard to human health and safety or the environment or if additional assessment and mitigation is needed.

(1) If the circumstances and conditions have been effectively addressed, future exposures have been precluded, and the site and materials adequately stabilized, the site/activity may be deemed as requiring "No Further Action/Response Complete (NFA/RC)". A report describing the factors considered and the decision rationale will be developed and published [Sections 2-7.1.6(j) and 2-7.3.2(e)].

(2) If it appears that potential hazards remain in excess of acceptable levels, or the possible risks remain unclear, then one of the following actions shall be undertaken:

(i) If all immediate hazards have been mitigated, but a potential chronic threat to human health and safety or the environment remains, the remediation pathway shall be followed (Phase III). This process will facilitate the deliberate examination of mitigation alternatives which correspond to the materials and threat remaining. Because of the information already considered and accumulated, this "non-time critical" approach may begin at the "Site Investigation" phase of the remediation process [Section 3-6.5.8(k)].

(ii) If all immediate hazards have been mitigated and there remains a threat requiring mitigation that the OSC determines to be “time critical” in nature, the removal process described in Section 3-6.5.8(g) below shall be followed.

(g) Phase II – Removal Action Memorandum (RAM).

(1) Prior to initiating further mitigation efforts, an evaluation and preliminary investigation to study the characteristics, extent, and circumstances of the event in question shall be conducted to provide a sound basis for the development of removal alternatives. A RAM shall be prepared and shall encompass:

(i) An identification of the source and nature of the release/discharge, and the estimation of risk to public health, safety, and the environment; delineation of the relative magnitude of the threat; and an evaluation of all factors necessary to determine the extent of a warranted removal action.

(ii) As appropriate, the collection and review of data, such as site management practices; information provided by waste generators; photographs (current and historical); literature searches; and personal interviews.

(iii) An engineering evaluation/cost analysis (EE/CA) to evaluate the need for removal and the type of removal alternatives available. The EE/CA shall include the relative cost of each alternative considered, a site-specific sampling and analysis plan (SAP), and a simplified quality assurance project plan (QAPP). These plans shall include the scope and purpose of proposed sample collection and the identification of analytical methods and detection limits. Field sampling shall be accomplished when further quantitative information is needed. This work shall include a perimeter survey and site characterization, with a goal of determining the areal and vertical extent of contamination. Safety issues associated with accomplishing such work shall be considered and addressed (e.g., personal protective equipment [PPE], engineering controls, unexploded ordnance [UXO] evaluation).

(iv) A project schedule with a written status report to be submitted to the Appropriate Agencies on a semi-annual basis.

(v) Consideration of resource damage restoration.

(2) The RAM shall be submitted to the Appropriate Agencies and the public for a 30-day comment period. USAKA shall respond to all comments and concerns received.

(3) The scope of a removal action involves the mitigation of contamination, as described in the RAM, which may pose undue harm or threat prior to the completion of remedial action (Phase III) activities. The type and extent of actions necessary are predicated on the prevailing circumstances (e.g., the migration of contamination to zones with increased exposure potential, the condition of existing containers, corrosive or unstable conditions, and/or a changing status of chemical make-up/phase) which may



deteriorate prior to the time that remedial action (Phase III) can begin. Primary considerations are the stability of the wastes and the potential for public contact with the hazardous materials/wastes. The OSC may implement whatever measures are deemed necessary to remove/minimize the impending hazard or to institute stabilization actions to limit exposures and/or contaminant migration.

(h) Phase II – Removal Action. This stage of action encompasses the implementation of selected removal actions which the OSC determines appropriate and cost-effective based on data in the EE/CA and on agency and public comment on the RAM. Several brief examples of acceptable removal actions are delineated below, although the list is not intended to be exhaustive:

- (1) Fences, warning signs, or other site-control or security precautions where animals or humans have access to the site.
- (2) Drainage control (e.g., run-off or run-on diversion) where needed to reduce migration off the site or to prevent precipitation or run-off from other sources (such as flooding).
- (3) Stabilization of berms, dikes, or impoundments or drainage or closing of ponds to maintain the integrity of the structures.
- (4) Capping of contaminated soil or sludge to reduce migration into soil, groundwater, or surface water.
- (5) Use of chemicals and other materials to retard the spread of the release or discharge.
- (6) Excavation, consolidation, or removal of highly contaminated soil from drainage or other areas where such actions will reduce the spread of, or direct contact with, the contamination.
- (7) Removal of drums, barrels, tanks, and other bulk containers that contain or may contain hazardous materials or petroleum products where removal will reduce the likelihood of spillage; leakage; exposure of humans, animals, or the food chain; or fire or explosion.
- (8) Containment, treatment, or disposal of hazardous materials where such action is likely to reduce exposure of humans, animals, or the food chain.
- (9) Provision of alternative water supplies where necessary to reduce exposure of the human population to contaminated water.
- (10) Temporary relocation of the human population to protect public health, safety, and the environment.

(i) Phase II – Effectiveness of Removal Action.

(1) Following a removal action, a verification assessment shall be conducted to evaluate whether time-critical hazards have been adequately mitigated. The verification assessment shall include sampling and analysis in consonance with the SAP and QAPP developed for the EE/CA. Further, the collection, handling, and evaluation of investigation-derived wastes (IDW) for this and associated project steps will be addressed. (These topics are described in Section 3-6.5.8(s), below.)

(2) The verification assessment and accompanying findings and recommendations shall be provided to the Appropriate Agencies, which shall have a period of 30 days for review and comment. If, in conjunction with/following the agency comment period, USAKA determines that an unacceptable risk remains, removal actions (as described in Section 3-6.5.8(h)) shall be continued. In circumstances where it is determined that the immediate hazards have been mitigated, all supporting data and rationale shall be documented in a formal report which will be made available for 30 days for public review and comment. The report will indicate which of two possible courses of action is proposed: 1) the mitigation efforts are deemed complete and effective, rendering a determination of NFA/RC, or 2) potential contamination remaining may be addressed in a non-time critical manner via the remediation pathway (Phase III). A final report will address all comments and concerns presented and include a determination which course of action will be followed.

(i) A determination of NFA/RC shall be accompanied by evidence that removal has been completed and/or that the associated exposure risks have been reduced to acceptable levels. An NFA/RC designation is an endpoint, meaning that all requisite mitigation work and evaluation has been fully implemented.

(ii) The persistent presence of contamination at levels below that which has been deemed to pose an emergency environmental condition may require further evaluation to determine the potential impacts of recurring, long-term exposures. Thus, a Phase III "Remediation" evaluation may be undertaken. Data obtained from the Phase II actions may provide sufficient data/information to facilitate moving directly into the "Phase III - Data Evaluation" stage. Where sufficient data/information from a Phase II removal action is not available, a Preliminary Assessment and Site Investigation shall be performed.

(j) Phase III – Preliminary Assessment. A PA conducted to support a remedial action shall consist of a review of all existing information regarding a release or discharge, such as the potential pathways of exposure, exposure targets (i.e., human and/or ecologic receptors), and the source and nature of releases or discharges. It is important to note that the requisite information may be available at locations other than USAKA; therefore, files and personnel resources maintained by the Army and the USAKA operating contractor at other locations must be evaluated, as well. A summary report delineating these findings will be developed and distributed to the Appropriate Agencies for information and review.

(k) Phase III – Site Investigation.

(1) A site investigation (SI) shall be undertaken to obtain sufficient data/information for each site to facilitate sound decisions regarding the presence of contamination, the potential long-term risks to human and ecological receptors, and the requisite remedial measures to be instituted. The SI may be performed in multiple phases, if necessary. A general site characterization/assessment is accomplished initially to identify sites exhibiting potential contamination and/or unacceptable risk. Subsequent investigation(s) may be undertaken to identify the extent and magnitude of contamination and determine the degree of "risk" posed to potential receptors via the various exposure pathways. The basic goals of the SI include the development of sufficient information to effectively evaluate alternatives and concerns necessary for selecting a remedy. A comprehensive report shall be developed, summarizing all findings and delineating the sampling rationale used.

(2) Significant planning and forethought must precede the accomplishment of an SI. The Remedial Program Manager (RPM) must ensure that sufficient, representative data is collected from each respective media to facilitate the prescribed assessment of the extent and magnitude of contamination, the potential for migration and exposure to sensitive receptors, and the potential impacts incurred upon human health, safety, and the environment. Although the specific requirements of each situation will vary, and must be evaluated independently, the planning stages of an SI may encompass:

(i) Conceptual Site Model (CSM). The development of a CSM comprises a major step of the SI planning and preparation. The purposes of the CSM include an identification of potential contaminants of concern at each site, the physical and chemical states likely present, and information regarding the potential toxicity/carcinogenicity, propensity for bioaccumulation, persistence, and mobility of each contaminant. Further, the CSM shall address the possible contaminant migration pathways through environmental media, concomitant exposure pathways, potential human and ecological receptors (with emphasis on sensitive subpopulations), and the likely exposure routes (e.g., inhalation, ingestion, and absorption) for each contaminant. From this, and realistic future land-use information, a viable method for data evaluation shall be developed using a tiered, risk-based approach (described in Section 3-6.5.8 (l), below).

(ii) Sampling and Analysis Plan (SAP). The type, quantity, and location of samples needed to characterize the site/problem is presented in the SAP. In addition, the analytical methods, detection limits, and further information regarding the assessment of data (including a description of the use and collected of background data, as necessary) are presented in this document. The SAP serves as the basic SI Workplan.

(iii) Site Safety and Health Plan (SSHP). Preparation of site-specific safety and health plans that specify employee training; medical surveillance requirements; potential hazards posed to the employees; PPE and engineering controls to protect workers; and emergency procedures to be instituted shall be developed, as needed. All personnel involved in the SI activities must read and sign this plan, to acknowledge

understanding. This plan shall also be coordinated with USAKA and operating contractor safety offices.

(l) Phase III – Data Evaluation. The assessment of data resulting from the SI shall be used to determine whether an unacceptable threat/hazard is posed to human and/or ecological receptors, to ascertain the extent and magnitude of such contamination, and to facilitate the evaluation and selection of alternative mitigation measures. A tiered, risk-based approach, as described below, shall be used for the assessment of data to determine if an unacceptable threat/hazard exists. A report detailing the SI and data evaluation findings, as well as recommended actions, shall be developed and submitted to the Appropriate Agencies and the public for 30 days for review and comment.

(1) Data from the SI shall be screened initially to make a comparison of contamination with background levels of the material in the soil. Such comparison is particularly applicable to naturally-occurring metals (e.g., lead, arsenic, barium, etc.) concentrations, as organic compounds of concern are not found in nature. Naturally-occurring metals of primary note in soils and sediments within Pacific islands formed by volcanic action and coral growth, which must be assessed carefully include arsenic and barium.

(2) The next method of data assessment involves comparison with relevant screening criteria. The criteria presented in Sections 3-6.5.8(l)(2)(i) and (l)(2)(ii) below shall be used to characterize the threats/risks posed to public health, safety, and the environment. Data that do not exceed the screening criteria may be considered "safe", requiring no further immediate action. These findings must be presented to the Appropriate Agencies for review.

(i) USEPA Region IX, Preliminary Remediation Goals (PRGs)(current version).

(ii) National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SquiRTs), (current version).

(3) Where contaminant screening criteria are exceeded, a baseline risk assessment shall be performed. The data that has exceeded previous screening procedures shall be assessed using site-specific exposure and contaminant toxicity information to further delineate the potential hazards/risks posed to public health, safety, and the environment. Among the critical exposure information requisite for this stage of assessment is a determination of potential receptor(s) (whether human or ecological), a complete toxicant evaluation to include materials present, the relative extent and magnitude of contamination/exposure area, and the pathway(s) through which exposure may occur (e.g., groundwater, surface water, ambient air, dust, surface or subsurface soils, surface contact, or via the foodchain). In addition, the baseline risk assessment shall be used to help establish acceptable exposure levels for use in discerning viable remedial alternatives. Encompassed in the consideration of acceptable exposure levels are the following factors:

(i) Concentration levels for systemic toxicants to which the human population, including sensitive sub-groups, may be exposed without adverse effect during a lifetime or part of a lifetime, incorporating an adequate margin of safety. For non-carcinogens, a cumulative hazard index of 1 or less shall be used as the threshold for further evaluation.

(ii) For known or suspected carcinogens, acceptable exposure levels represent an excess upper-bound lifetime cumulative cancer risk of between  $10E-4$  and  $10E-6$  to an individual, based on information regarding dose and receptor response. (These values correlate to the possible increased incidence of one excess cancer case in a population of 10,000 to 1,000,000 persons exposed to that level of contaminant over a 70-year lifetime.) The  $10E-6$  risk level shall be used as the threshold for determining remediation goals for alternatives where cleanup standards are not available or are not sufficient because of the presence of multiple contaminants or multiple pathways of exposure or sensitive receptor populations. A  $10E-4$  risk level may apply to sites, and situations, deemed industrial with restricted accessibility from sensitive receptor populations (human or ecological). Such determinations shall be made by the RPM following coordination with the Appropriate Agencies.

(iii) Factors related to technical limits, such as detection or quantification limits for contaminants.

(iv) Factors related to uncertainty shall be delineated and described.

(v) Maximum contaminant levels (MCLs) shall be used as standards for potential releases to potable groundwater and surface water resources. Maximum contaminant level goals (MCLGs), established under the standards for drinking water in Section 3-3, that are set at levels above zero shall be attained for groundwater and surface water that are current or potential sources of drinking water. If the MCLG is set at zero, and no MCL exists, alternative, risk-based criteria shall be developed for these resources following coordination with the Appropriate Agencies.

(vi) Standards for surface and ground water quality established in Section 3-2 shall be attained where applicable to the circumstances of the release.

(vii) Cleanup levels should not be below natural background levels.

(m) Phase III – Remedial Action Decision Point. There are three possible decisions resultant from the preceding data evaluation stage:

(1) Where the data falls below the prescribed screening levels, or the prevalent risks are deemed to fall within acceptable limits, and resource damage restoration is deemed inappropriate, further remedial actions are not warranted. A NFA/RC determination, along with the associated assessment rationale, shall be submitted to the Appropriate Agencies for their review. Additional data clarification shall be provided to a reviewing agency upon request.

(2) Where it is determined that remedial action is necessary to mitigate the threats/risks posed to human health, safety, and/or the environment, a feasibility study shall be initiated in accordance with Section 3-6.5.8(n) below.

(3) Where it is determined that a time critical environmental condition exists, a removal action will be initiated under the procedures described in Section 3-6.5.8(h). This approach shall allow a more timely, expedient accomplishment of requisite mitigation.

(n) Phase III – Feasibility Study.

(1) The feasibility study shall assess all available alternative actions that may be implemented to mitigate unacceptable risks posed by contaminants present in the environment and consider restoration of damaged environmental resources. The alternatives shall be evaluated for effectiveness according to the degree to which they reduce toxicity, mobility, or volume through treatment; minimize residual risk and afford long-term protection; comply with cleanup or alternative standards established; minimize short-term and long-term adverse health effects; and permit the timely initiation of protective action. Technical feasibility and cost shall also be considered in selecting an alternative action.

(2) The RPM shall decide upon the methodology (ies) to be instituted, in consultation with the Appropriate Agencies and other stakeholders. The selection of an appropriate remedial action shall follow a three-step process as described in (i) – (iii), below.

(i) The available alternative measures shall be assessed according to their ability to effectively mitigate all potential hazards/risks; the technical feasibility for initial implementation, including recurring operation and maintenance considerations; and the relative cost effectiveness of the proposed remedies. Cost-effectiveness shall be determined by evaluating the overall effectiveness (i.e., long-term effectiveness and permanence; reduction of toxicity, mobility, or volume of the contaminant through treatment; and short-term effectiveness) which is then compared to the total project cost. A factor to be considered in this evaluation involves the required disposition and handling of equipment and wastes generated during execution of the various proposals.

(ii) The RPM shall prepare a proposed plan that identifies the preferred remedial alternative(s) and shall ensure that this plan is made available to the public for review and comment. The proposed plan shall briefly describe the preferred action(s) and the other alternatives considered, and shall summarize the information used to select the preferred alternative(s). At a minimum, the proposed plan shall:

(A) Include a brief summary description of the remedial alternatives that were evaluated.

(B) Include a summary of all formal comments received from the Appropriate Agencies.

(C) Identify the rationale that supports the preferred alternative(s) and discuss.

(D) Present a summary explanation of all pertinent cleanup standards.

(iii) The formal public review and comment process shall include publication of a notice of availability and a brief synopsis of the proposed plan. A period of 30 days from the date the plan was made public shall be allotted for the submission of written comments from the public. USAKA may extend this timeframe if requested by the public. If there is sufficient public interest and/or it is requested by the public, USAKA shall conduct a public meeting at or near the site during the comment period. A summary of all comments received during the meeting and throughout the designated comment period, along with USAKA's response to each, shall be documented and made available to the public for review, as well.

(o) Phase III – Development of Remediation Plan.

(1) The RPM, in conjunction with the Appropriate Agencies, shall consider all comments and new information provided by the public or other stakeholders in selecting the final remedy. Implementation of the selected remedy shall be conducted under a DEP completed in accordance with Section 2-17.3. A DEP for implementation of the selected remedy shall contain, but not be limited to, the following:

(i) A discussion indicating the selected remedy is protective of public health, safety, and the environment; how the remedy eliminates, reduces, or controls exposures to human or environmental receptors; and how the remedy restores environmental resources that have been damaged.

(ii) The cleanup standards that are applicable and relevant to the site.

(iii) The cleanup standards that will not be met by implementing the remedy and the reasons those standards are considered inapplicable or unnecessary.

(iv) How the remedy is cost effective (an explanation of its overall effectiveness in relation to its cost).

(v) How the remedy uses permanent solutions and alternative treatment technologies or resource-recovery technologies to the maximum extent practicable.

(vi) The extent to which the remedy will permanently and significantly reduce the toxicity, mobility, or volume of hazardous pollutants or contaminants.

(vii) As appropriate, the remediation goals expected to be achieved by the selected remedy and the methods for measuring the performance of the remedy, such as sampling water, air, soil, and other affected environmental media.

(viii) A discussion of significant changes to the remedial action in response to public comments.

(ix) A discussion of whether hazardous substances and pollutants will remain at the site, requiring a review every five years.

(x) As appropriate, a commitment for further analysis and selection of long-term response measures within an appropriate time frame.

(xi) A discussion of waste disposal [Section 3-6.5.8(t)].

(p) Phase III – Execution of Remediation Plan.

(1) The design and construction/implementation of the preferred remedial action(s) shall be undertaken by a commercial architectural and engineering firm with proven experience in the field of environmental remediation.

(2) Design of the preferred remedial action(s) shall take into consideration the space, operational, and resource limitations at USAKA.

(3) The design and construction shall incorporate detailed as-built plans, standing operating procedures (SOPs), and/or equipment maintenance information and manufacturer's instructions, as warranted. For example, the installation of monitoring wells to facilitate the long-term evaluation of contaminant remediation in groundwater may require the provision of comprehensive drilling logs and hydrological assessment; detailed operating instructions regarding the low-flow bladder pumps dedicated to each well; and the requisite maintenance and calibration schedules to maintain equipment warranties. In addition, all wastes generated (including IDW) shall be contained, characterized, and disposed of in accordance with Section 3-6.5.7. USAKA shall ensure that the remedial actions conform to the selected remedy and meet the appropriate cleanup or alternative standards.

(4) Changes in the scope or nature of the remedial action must be documented in a DEP modification or a new DEP for the remedial action.

(q) Phase III – Verification Sampling and Assessment.

(1) In order to develop the basis for termination of the remediation process, verification sampling and analysis shall be performed. This effort shall ensure the collection of a representative number and type of samples requisite to determine the effectiveness of the remedial action(s) instituted; that the appropriate cleanup or



alternative standards have been achieved; and, that human health, safety, and the environment have been adequately protected and restored.

(2) Subsequent to determining the minimum number of samples necessary to meet the designated data quality objectives, a systematic sampling approach (grid) shall be developed to obtain sufficient samples to validate the effectiveness of remedial actions. The resulting data shall be compared to the cleanup or alternative standards. A detailed SAP shall be developed and followed for this stage.

(r) Phase III – Final Project Evaluation. All actions and assessment findings/rationale shall be documented and provided to the public and the Appropriate Agencies. The RPM, in consultation with the Appropriate Agencies, shall make one of three determinations from the verification assessment performed:

(1) The preferred remedial action(s) has(have) effectively reduced the levels of residual contamination in the environment below the cleanup or alternative standards and that the site has been determined to pose no further unacceptable threat/risk to human health, safety, or the environment and that damaged environmental resources have been adequately restored. This effectively serves as the termination of remediation and will result in a designation of NFA/RC. The proposed basis for a NFA/RC determination shall be provided to the Appropriate Agencies and public for a 30 day review period. The RPM shall consider and respond to all comments received in documenting a final NFA/RC determination.

(2) If contamination exceeding the cleanup standards or inadequate restoration of environmental resources remain after execution of the remedial action, the RPM shall re-evaluate the selected remedy and either:

(i) Propose modification of the selected remedy via a modification to the DEP or completion of a new DEP for the remedial action, modifications to the proposed remedy could include long-term monitoring and/or institutional controls in lieu of further remedial action; or

(ii) Propose repetition of the remedial action via a modification to the DEP.

(s) Phase IV – Characterization of Investigation-Derived Wastes (IDW). The IDW from each stage of investigation or implementation of remedial action(s) undertaken (Figure 3-6.5.8) shall be collected, contained, and characterized to discern the appropriate mode of disposition to be accomplished. Such wastes include excess soils removed to facilitate sample collection; rinsate and wash waters emanating from equipment and personnel decontamination activities; disposable/consumable sampling equipment (e.g., plastic scoops and containers); and PPE. (This listing is not intended to be exhaustive; but to provide examples for comparison purposes.) The characterization of such wastes shall encompass the collection of representative samples and analysis, as presented in Section 3-6.5.6(c), or via generator knowledge of the waste.



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(t) Phase IV – Appropriate Disposal of Wastes. Disposal methods, packaging, labeling, transport, management, and disposition of wastes resulting from remediation activities shall be described in the DEP for the remedial action. All actions shall be consistent with UES provisions for the handling and disposal of wastes.

### **3-6.6 PROHIBITIONS**

#### **3-6.6.1 Importation**

No unregistered, banned, canceled, or suspended pesticides regulated by FIFRA, PCBs or PCB items, asbestos or any other material identified by the Commander, USAKA shall be imported or introduced into the RMI for use by USAKA operations [Section 3-6.5.1(c)(3)].

#### **3-6.6.2 Storage of Hazardous Waste**

Unless otherwise provided in Section 3-6.5.3(b)(1)(ii) no hazardous waste shall not be stored for more than 90 days [120 days if a 30 day extension is granted under Section 3-6.5.3(b)(1)(i)(E)] except as documented in a final DEP [Section 3-6.5.3(b)(1)(i)].

#### **3-6.6.3 Underground Storage Tanks**

Installation of new underground storage tanks is prohibited.

#### **3-6.6.4 Distribution Outside USAKA**

No HMWPP may be sold or distributed to a person outside of USAKA but within the RMI unless authorized by the Commander, USAKA after consultation with the RMIEPA [Section 3-6.5.4(a)(2)].

#### **3-6.6.5 Treatment of Hazardous Waste**

(a) Except as allowed in Section 3-6.5.7(b)(4) no hazardous waste may be treated or disposed of at USAKA except as documented in a final DEP [Section 3-6.5.7(a)(1)].

(b) No hazardous waste or waste petroleum products may be exported from USAKA to the RMI for treatment or disposal [Section 3-6.5.7(b)(1)].

#### **3-6.6.6 Disposal of PCB Wastes**

No PCBs or PCB items shall be incinerated, placed in landfills, or otherwise disposed of at USAKA. [Section 3-6.5.7(c)(4)(ii)]

[3-6.5.8(t)]

### **3-6.6.7 Disposal of Asbestos**

Disposal of asbestos at USAKA is prohibited [Section 3-6.5.7(c)(5)].

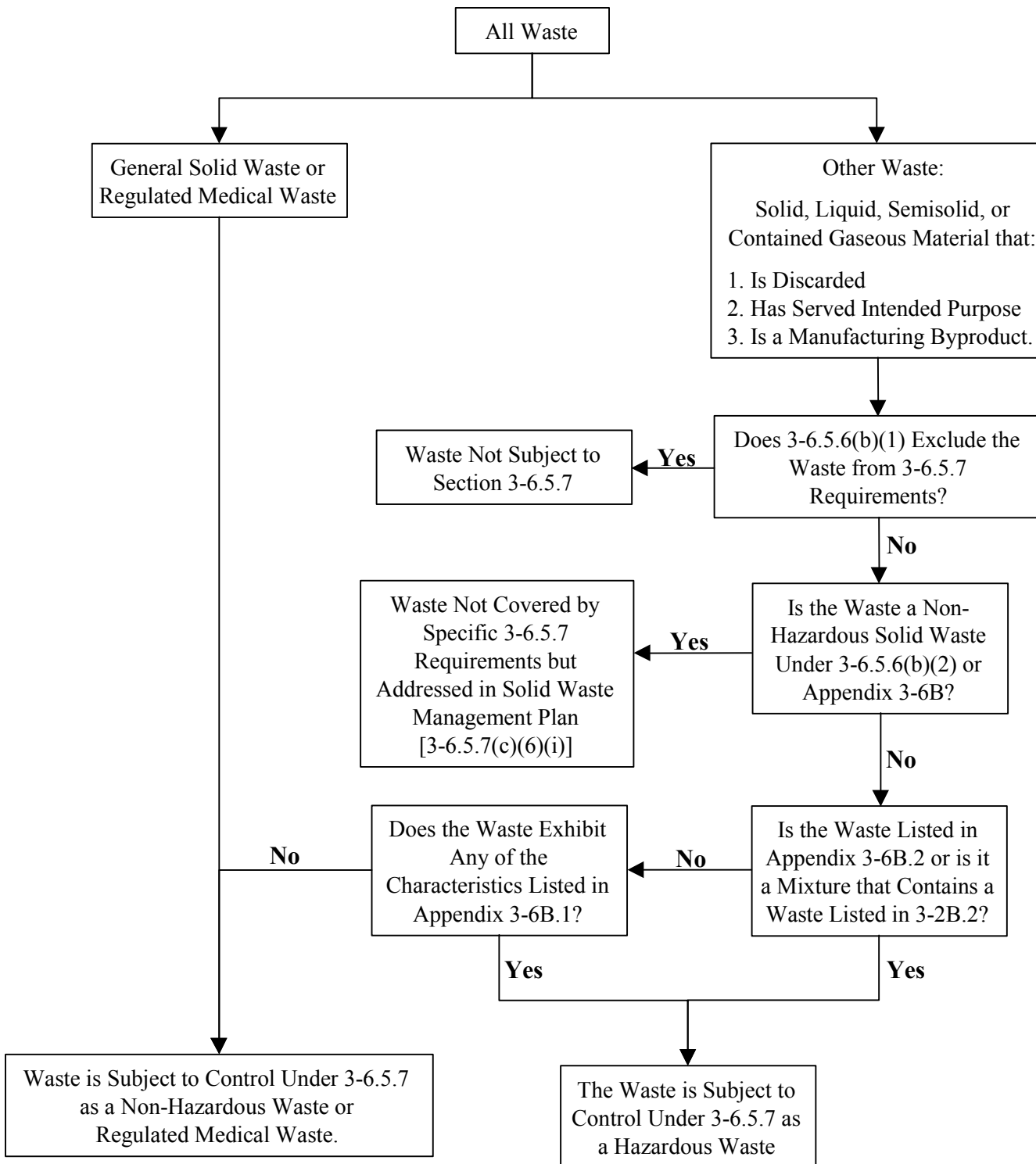
### **3-6.6.8 Discharge of Ballast**

Refer to standards of Section 3-6.5.4(b)(2)(v).

**APPENDIX 3-6A**  
**DEFINITIONS OF SOLID AND HAZARDOUS WASTES**

This appendix is intended to assist with the determination of non-hazardous and hazardous waste. The determination of non-hazardous and hazardous waste subject to Chapter 3-6.5.7 is diagrammed in Figure 3-6A.

**FIGURE 3-6A**  
**DETERMINATION OF NON-HAZARDOUS AND**  
**HAZARDOUS WASTE SUBJECT TO CHAPTER 3-6.5.7**



**APPENDIX 3-6 B**  
**CHARACTERISTICS OF HAZARDOUS WASTES**  
**AND**  
**LISTS OF HAZARDOUS WASTES**

**3-6B.1 CHARACTERISTICS OF HAZARDOUS WASTE**

(a) General. The standards in this appendix are subject to the requirements in Section 2-22 for health-based standards.

(1) A solid waste, as defined in Section 3-6.5.4, that is not excluded from regulation as a hazardous waste under Section 3-6.5 is a hazardous waste if it exhibits any of the characteristics identified in this appendix.

(2) A hazardous waste that is identified by a characteristic in this section is assigned every U.S. Environmental Protection Agency (USEPA) Hazardous Waste Number that is applicable. The number shall be used in complying with the notification, records-keeping, and reporting requirements of the Standards.

(3) For purposes of this section, a sample obtained using any of the applicable sampling methods specified in Appendix I of 40 CFR 261 shall be considered a representative sample within the meaning of this section.

(4) For the purposes of this section, 3-6B.1, of this appendix, the publications detailing required analytical techniques and test methods are incorporated by reference in 40 CFR 260.11 and 40 CFR 761.19.

(b) Ignitability

(1) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(i) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point that is less than 60° C (140° F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in American Society for Testing and Materials (ASTM) Standard D-93-79 or D-93-80; or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78; or as determined by an equivalent test method approved by USEPA.

(ii) It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical changes and when ignited burns so vigorously and persistently that it creates a hazard.



(iii) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by USEPA.

(iv) It is an oxidizer as defined in 49 CFR 173.151.

(2) A solid waste that exhibits the characteristic of ignitability has the USEPA Hazardous Waste Number of D001.

(c) Corrosivity

(1) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(i) It is aqueous and has a pH less than or equal to 2 or more than or equal to 12.5, as determined by a pH meter using either a USEPA test method or an equivalent test method approved by USEPA. The USEPA test method for pH is specified as Method 5.2 in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods."

(ii) It is a liquid and corrodes steel (SAE 1020) at a rate higher than 6.35 mm (0.250 inch) per year at a test temperature of 55 C (130 F) as determined by the test method specified in National Association of Corrosion Engineers (NACE) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" or an equivalent test method approved by USEPA.

(2) A solid waste that exhibits the characteristic of corrosivity has the USEPA Hazardous Waste Number of D002.

(d) Reactivity

(1) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(i) It is normally unstable and readily undergoes violent change without detonating.

(ii) It reacts violently with water.

(iii) It forms potentially explosive mixtures with water.

(iv) When mixed with water, it generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

(v) It is a cyanide- or sulfide-bearing waste that when exposed to pH conditions between 2 and 12.5 can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

(vi) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if it is heated under confinement.

(vii) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(viii) It is a forbidden explosive as defined in 49 CFR 173.51 or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88.

(2) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

(e) Toxicity

(1) A solid waste exhibits the characteristic of toxicity if, using the test methods described in Appendix II of 40 CFR 261 or equivalent methods approved by USEPA, the extract from a representative sample of the waste contains any of the contaminants listed in Table 3-6B.1 at the concentration equal to or greater than the respective value given in that table. If the waste contains less than 0.5 percent filterable solids, the waste itself, after being filtered using the methodology outlined in Appendix II of 40 CFR 261, is considered the extract for the purpose of this section.

(2) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table 3-6B.1, which corresponds to the toxic contaminant that causes it to be hazardous.

<b>TABLE 3-6B.1</b> <b>Maximum Concentration Of Contaminants For Toxicity Characteristic</b>			
<b>USEPA HW No.<sup>1</sup></b>	<b>Contaminant</b>	<b>CAS No.<sup>2</sup></b>	<b>Regulatory Level (mg/l)</b>
D004	arsenic	7440-38-2	5.0
D005	barium	7440-39-3	100.0
D018	benzene	71-43-2	0.5
D006	cadmium	7440-43-9	1.0
D019	carbon tetrachloride	56-23-5	0.5
D020	chlordane	57-74-9	0.03
D021	chlorobenzene	108-90-7	100.0
D022	chloroform	67-66-3	6.0
D007	chromium	7440-47-3	5.0
D023	o-cresol	95-48-7	<sup>4</sup> 200.0
D024	m-cresol	108-39-4	<sup>4</sup> 200.0
D025	p-cresol	106-44-5	<sup>4</sup> 200.0
D026	cresol	---	<sup>4</sup> 200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-dichlorobenzene	106-46-7	7.5
D028	1,2-dichloroethane	107-06-2	0.5
D029	1,1-dichloroethylene	75-35-4	0.7
D030	2,4-dinitrotoluene	121-14-2	<sup>3</sup> 0.13
D012	Endrin	72-20-8	0.02
D031	heptachlor (and its epoxide)	76-44-8	0.008
D032	hexachlorobenzene	118-74-1	<sup>3</sup> 0.13
D033	hexachlorobutadiene	87-68-3	0.5
D034	hexachloroethane	67-72-1	3.0
D008	lead	7439-92-1	5.0
D013	lindane	58-89-9	0.4
D009	mercury	7439-97-6	0.2
D014	methoxychlor	72-43-5	10.0
D035	methyl ethyl ketone	78-93-3	200.0
D036	nitrobenzene	98-95-3	2.0
D037	pentachlorophenol	87-86-5	100.0
D038	pyridine	110-86-1	<sup>3</sup> 5.0
D010	selenium	7782-49-2	1.0
D011	silver	7440-22-4	5.0
D039	tetrachloroethylene	127-18-4	0.7
D015	toxaphene	8001-35-2	0.5
D040	trichloroethylene	79-01-6	0.5
D041	2,4,5-trichlorophenol	95-95-4	400.0

<b>TABLE 3-6B.1</b> <b>Maximum Concentration Of Contaminants For Toxicity Characteristic</b>			
<b>USEPA HW No.<sup>1</sup></b>	<b>Contaminant</b>	<b>CAS No.<sup>2</sup></b>	<b>Regulatory Level (mg/l)</b>
D042	2,4,6-trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (silvex)	93-72-1	1.0
D043	vinyl chloride	75-01-4	0.2
NOTES: <sup>1</sup> USEPA Hazardous Waste Number. <sup>2</sup> Chemical Abstracts Service number. <sup>3</sup> Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level. <sup>4</sup> If o, m, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l. The standards in this table are subject to the requirements in Section 2-22.			

[Based on 40 CFR 261.24]

### 3-6B.2 Lists of Hazardous Wastes

#### (a) General

- (1) A solid waste is a hazardous waste if it is listed in this section.
- (2) The USEPA Administrator will indicate the basis for listing the classes or types of wastes in the U.S. regulations by using one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

40 CFR 261, Appendix VII, identifies the constituent that caused the USEPA Administrator to list the waste as a Toxicity Characteristic Waste (E) or a Toxic Waste (T) in Section 3-6B.2(b).

(3) Each hazardous waste listed in Section 3-6B.2 is assigned a USEPA Hazardous Waste Number, which precedes the name of the waste. The number must be used in complying with the requirements for notification, records keeping, and reporting of the Standards.

(4) The following hazardous wastes listed in Table 3-6B.2(b) are subject to the exclusion limits for acutely hazardous wastes established in 40 CFR 261.5: USEPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.

#### (b) Hazardous Wastes from Nonspecific Sources

The solid wastes in Table 3-6B.2(b) are listed hazardous wastes from nonspecific sources.

<b>TABLE 3-6B.2(b)</b> <b>LISTED HAZARDOUS WASTES FROM NONSPECIFIC SOURCES</b>		
<b>USEPA Waste No.<sup>1</sup></b>	<b>Hazardous Waste</b>	<b>Hazard Code</b>
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures and blends used in degreasing containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chloro-benzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures and blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F003	The following spent nonhalogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures and blends containing, before use, only the above spent nonhalogenated solvents; and all spent solvent mixtures and blends containing, before use, one or more of the above nonhalogenated solvents, and, a total of 10 percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I) <sup>2</sup>
F004	The following spent nonhalogenated solvents: creosols and cresylic acid, and nitrobenzene; all spent solvent mixtures and blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)

<b>TABLE 3-6B.2(b)</b> <b>LISTED HAZARDOUS WASTES FROM NONSPECIFIC SOURCES</b>		
<b>USEPA Waste No.<sup>1</sup></b>	<b>Hazardous Waste</b>	<b>Hazard Code</b>
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxy-ethanol, and 2-nitropropane; all spent solvent mixtures and blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)
F006	Wastewater treatment sludge from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning and stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating-bath solutions from electroplating operations.	(R,T)
F008	Plating-bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R,T)
F009	Spent stripping and cleaning-bath solutions from electroplating operations where cyanides are used in the process.	(R,T)
F010	Quenching-bath residues from oil baths from metal heat-treating operations where cyanides are used in the process.	(R,T)
F011	Spent cyanide solutions from salt-bath pot cleaning from metal heat-treating operations.	(R,T)
F012	Quenching wastewater treatment sludge from metal heat-treating operations where cyanides are used in the process.	(T)
F019	Wastewater treatment sludge from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum-can washing when such phosphating is an exclusion conversion coating process.	(T)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This list does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component).	(H)

<b>TABLE 3-6B.2(b)</b> <b>LISTED HAZARDOUS WASTES FROM NONSPECIFIC SOURCES</b>		
<b>USEPA Waste No.<sup>1</sup></b>	<b>Hazardous Waste</b>	<b>Hazard Code</b>
F039	Leachate resulting from treatment, storage, or disposal of wastes classified by more than one waste code under Subpart D or from a mixture of wastes classified under subparts C and D of this part.	(T)
Notes <sup>1</sup> USEPA Hazardous Waste Number <sup>2</sup> (I,T) should be used to specify mixtures containing ignitable and toxic constituents. The substances in this table are subject to the provisions of Section 2-22. [(CFR Parent Table Section 261.31(a) table revised at 57 FR 61502, Dec. 24, 1992; amended at 60 FR 33913, June 29, 1995]		



(c) Discarded Commercial Chemical Products, Off-Specification Products, Container Residues, and Spill Residues

The following materials or items are hazardous wastes if they are discarded or are intended for discarding because they are no longer useful; if they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment; if they are otherwise applied to the land in lieu of their original intended use or if they are in products that are applied to the land in lieu of their original intended use; or if, in lieu of their original intended use, they are produced for use as, or as a component of, a fuel, distributed for use as a fuel, or burned as a fuel.

(1) All commercial chemical products or manufacturing chemical intermediates having the generic name listed in Sections 3-6B.2(c)(5) or (6).

(2) All off-specification commercial chemical products or manufacturing chemical intermediates that, if meeting specifications, would have the generic names listed in Sections 3-6B.2(c)(5) or (6).

(3) All residue remaining in containers or in an inner liner removed from a container that have held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in Sections 3-6B.2(c)(5) or (6) of this section, unless the containers are empty as defined in Section 3-6.5.5(a)(2)(vii).

[Comment: Unless a residue is beneficially used or reused, legitimately recycled or reclaimed, or accumulated, stored, transported or treated before such use, reuse, recycling, or reclamation, EPA considers the residue intended for discarding and thus a hazardous waste. An example of a legitimate reuse of the residue is a case in which the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue is a case in which the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.]

(4) All residues or contaminated soil, water, or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in Sections 3-6B.2(c)(5) or (6) of this section, or all residue or contaminated soil, water, or other debris resulting from the cleanup of a spill into or on any land or water of an off-specification chemical product and manufacturing chemical intermediate that, if it met specifications, would have the generic name listed in Sections 3-6B.2(c)(5) or (6) of this section.

[Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in . . ." refers to a chemical substance that is manufactured or formulated for commercial or manufacturing use that consists of the commercially pure grade of the chemical, all technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. The term does not refer to a material, such as a manufacturing-process waste,

that contains any of the substances listed in Sections 3-6B.2(c)(5) or (6). If a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in Sections 3-6B.2(c)(5) or (6), the waste will be listed in Section 3-6B.2(b) or will be identified as a hazardous waste by the characteristics presented in Section 3-6B.1.]

(5) The commercial chemical products, manufacturing chemical intermediates, and off-specification commercial chemical products referred to in Sections 3-6B.2(c)(1) through (4) of this section are hereby identified as acutely hazardous wastes (H).

[Comment: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letters T (Toxicity) and R (Reactivity). The absence of a letter indicates that the compound is listed only for acute toxicity.]

These wastes and their corresponding USEPA Hazardous Waste Numbers are listed in Table 3-6B.2(c)(5).

(6) The commercial chemical products, manufacturing chemical intermediates, and off-specification commercial chemical products referred to in Sections 3-6B.2(c)(1) through (4) of this section are hereby identified as toxic wastes (T) unless otherwise designated.

These wastes and their corresponding EPA Hazardous Waste Numbers are listed in Table 3-6B.2(c)(6).

**TABLE 3-6B.2(c)(5)**  
**ACUTELY HAZARDOUS WASTES (H)**

<b>USEPA HW No. <sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P203	1646-88-4	Aldicarb sulfone
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P099	506-61-6	Argentate(1-), bis(cyano-C)-, potassium
P010	7778-39-4	Arsenic acid H <sub>3</sub> AsO <sub>4</sub>
P012	1327-53-3	Arsenic oxide As <sub>2</sub> O <sub>3</sub>
P011	1303-28-2	Arsenic oxide As <sub>2</sub> O <sub>5</sub>
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)
P046	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P127	1563-66-2	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
P188	57-64-7	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo [2,3-b]indol- 5-yl methylcarbamate ester (1:1)

**TABLE 3-6B.2(c)(5)**  
**ACUTELY HAZARDOUS WASTES (H)**

<b>USEPA HW No.<sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P001	<sup>2</sup> 81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium powder
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-[methylamino)carbonyl] oxime
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide $\text{Ca}(\text{CN})_2$
P189	55285-14-8	Carbamic acid, [(dibutylamino)-thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester
P191	644-64-4	Carbamic acid, dimethyl-, 1-[(dimethylamino)carbonyl]- 5-methyl-1H-pyrazol-3-yl ester
P192	119-38-0	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H- pyrazol-5-yl ester
P190	1129-41-5	Carbamic acid, methyl-, 3-methylphenyl ester
P127	1563-66-2	Carbofuran
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P189	55285-14-8	Carbosulfan
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl)thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide $\text{Cu}(\text{CN})$
P202	64-00-6	m-Cumenyl methylcarbamate
P030	.....	Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride
P033	506-77-4	Cyanogen chloride $(\text{CN})\text{Cl}$
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate

<b>TABLE 3-6B.2(c)(5)</b> <b>ACUTELY HAZARDOUS WASTES (H)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha, 4alpha, 4beta, 5alpha, 8alpha, 8beta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha, 4alpha, 4beta, 5beta, 8beta, 8beta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5, 6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta, 7aalpha)-
P051	<sup>2</sup> 72-20-8	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5, 6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta, 7aalpha)-, & metabolites
P044	60-51-5	Dimethoate
P046	122-09-8	alpha,alpha-Dimethylphenethylamine
P191	644-64-4	Dimetilan
P047	<sup>2</sup> 534-52-1	4,6-Dinitro-o-cresol, & salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramidate, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-4	Disulfoton
P049	541-53-7	Dithiobiuret
P185	26419-73-8	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)-carbonyl]oxime
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P194	23135-22-0	Ethanimidothioc acid, 2-(dimethylamino)-N-[[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester
P066	16752-77-5	Ethanimidothioic acid,N-[[[(methylamino) carbonyl]oxy]-, methyl ester
P101	107-12-0	Ethyl cyanide

**TABLE 3-6B.2(c)(5)**  
**ACUTELY HAZARDOUS WASTES (H)**

<b>USEPA HW No. <sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P198	23422-53-9	Formetanate hydrochloride
P197	17702-57-7	Formparanate
P065	628-86-4	Fulminic acid, mercury(2+) salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyl tetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P192	119-38-0	Isolan
P202	64-00-6	3-Isopropylphenyl N-methylcarbamate
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P196	15339-36-3	Manganese, bis(dimethylcarbamodithioato-S,S')-,
P196	15339-36-3	Manganese dimethyldithiocarbamate
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis[chloro-
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P198	23422-53-9	Methanimidamide, N,N-dimethyl-N'-[3-[(methylamino)-carbonyl]oxy] phenyl]-, monohydrochloride
P197	17702-57-7	Methanimidamide, N,N-dimethyl-N'-[2-methyl- 4-[[[(methylamino)carbonyl]oxy]phenyl]-
P050	115-29-7	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9, 10, 10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P199	2032-65-7	Methiocarb
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine

**TABLE 3-6B.2(c)(5)**  
**ACUTELY HAZARDOUS WASTES (H)**

<b>USEPA HW No.<sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methylactonitrile
P071	298-00-0	Methyl parathion
P190	1129-41-5	Metolcarb
P128	315-18-4	Mexacarbate
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl Ni(CO) <sub>4</sub> , (T-4)-
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cynaide Ni(CN) <sub>2</sub>
P075	<sup>2</sup> 54-11-5	Nicotine, & salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO <sub>2</sub>
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide OsO <sub>4</sub> , (T-4)-
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P194	23135-22-0	Oxamyl
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro-
P047	<sup>2</sup> 534-52-1	Phenol, 2-methyl-4,6-dinitro-, & salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P128	315-18-4	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate(ester)
P199	2032-65-7	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate
P202	64-00-6	Phenol, 3-(1-methylethyl)-, methyl carbamate
P201	2631-37-0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea

**TABLE 3-6B.2(c)(5)**  
**ACUTELY HAZARDOUS WASTES (H)**

<b>USEPA HW No.<sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester
P071	298-00-0	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester
P204	57-47-6	Physostigmine
P188	57-64-7	Physostigmine salicylate
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide K(CN)
P099	506-61-6	Potassium silver cyanide
P201	2631-37-0	Promecarb
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino) carbonyl]oxime
P203	1646-88-4	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol



**TABLE 3-6B.2(c)(5)**  
**ACUTELY HAZARDOUS WASTES (H)**

<b>USEPA HW No.<sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P008	504-24-5	4-Pyridinamine
P075	<sup>2</sup> 54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P204	57-47-6	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-
P114	12039-52-0	Selenious acid, dithallium(1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide Ag(CN)
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide Na(CN)
P108	<sup>2</sup> 57-24-9	Strychnidin-10-one, & salts
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P108	<sup>2</sup> 57-24-9	Strychnine, & salts
P115	7446-18-6	Sulfuric acid, dithallium(1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium oxide Tl <sub>2</sub> O <sub>3</sub>
P114	12039-52-0	Thallium(I) selenite
P115	7446-18-6	Thallium(I) sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide [(H <sub>2</sub> N)C(S)] <sub>2</sub> NH
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P185	26419-73-8	Tirpate
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium oxide V <sub>2</sub> O <sub>5</sub>

**TABLE 3-6B.2(c)(5)**  
**ACUTELY HAZARDOUS WASTES (H)**

<b>USEPA HW No.<sup>1</sup></b>	<b>CAS No.</b>	<b>Substance</b>
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	<sup>2</sup> 81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P205	137-30-4	Zinc, bis(dimethylcarbamodithioato-S,S')-,
P121	557-21-1	Zinc cyanide
P121	557-21-1	Zinc cyanide $\text{Zn}(\text{CN})_2$
P122	1314-84-7	Zinc phosphide $\text{Zn}_3\text{P}_2$ , when present at concentrations greater than 10% (R,T)
P205	137-30-4	Ziram
<sup>1</sup> USEPA Hazardous Waste Number <sup>2</sup> CAS Number given only for parent compound. The substances in this table are subject to the provisions of Section 2-22. [CFR Parent Table, §261.33(e) table amended at 59 FR 31551, June 20, 1994; revised at 60 FR 7848, Feb. 9, 1995; corrected at 60 FR 19165, April 17, 1995; 60 FR 25620, May 12, 1995]		

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U394	30558-43-1	A2213
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-
U240	<sup>2</sup> 94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U112	141-78-6	Acetic acid ethyl ester (I)
U144	301-04-2	Acetic acid, lead(2+) salt
U214	563-68-8	Acetic acid, thallium(1+) salt
see F027	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid, dimethyl-
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	Azirino[2',3':3,4]pyrrolo [1,2-a]indole-4,7-dione, 6-amino-8-[[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha,8beta,8aalpha,8balpha)]-
U280	101-27-9	Barban
U278	22781-23-3	Bendiocarb
U364	22961-82-6	Bendiocarb phenol
U271	17804-35-2	Benomyl
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	225-51-4	Benz[c]acridine
U017	98-87-3	Benzal chloride
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
U018	56-55-3	Benz[a]anthracene
U094	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
U012	62-53-3	Benzenamine (I,T)

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U014	492-80-8	Benzenamine, 4,4'-carbonimidoylbis [N,N-dimethyl-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U353	106-49-0	Benzenamine, 4-methyl-
U158	101-14-4	Benzenamine, 4,4'-methylenebis[2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride
U181	99-55-8	Benzenamine, 2-methyl-5-nitro-
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzenecetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-hloroethyl)amino]-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester
U070	95-50-1	Benzene, 1,2-dichloro-
U071	541-73-1	Benzene, 1,3-dichloro-
U072	106-46-7	Benzene, 1,4-dichloro-
U060	72-54-8	Benzene, 1,1'-(2,2-dichloroethylidene)bis [4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	1330-20-7	Benzene, dimethyl- (I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene, hexachloro-
U056	110-82-7	Benzene, hexahydro- (I)
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro-
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzenesulfonic acid chloride (C,R)

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U020	98-09-9	Benzenesulfonyl chloride (C,R)
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-chloro-
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U234	99-35-4	Benzene, 1,3,5-trinitro-
U021	92-87-5	Benzidine
U202	281-07-2	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts
U364	22961-82-6	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,
U278	22781-23-3	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-
U090	94-58-6	1,3-Benzodioxole, 5-propyl-
U367	1563-38-8	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-
U064	189-55-9	Benzo[ <i>rst</i> ]pentaphene
U248	281-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less
U022	50-32-8	Benzo[ <i>a</i> ]pyrene
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U085	1464-53-5	2,2'-Bioxirane
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I,T)
U160	1338-23-4	2-Butanone, peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1,4-dichloro- (I,T)

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U143	303-34-4	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy- 2-(1-methoxyethyl)-3methyl-1-oxobutoxy]methyl]-2,3,5,7 a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*), 7aalpha]]-
U031	71-36-3	n-Butyl alcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U372	10605-21-7	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester
U271	17804-35-2	Carbamic acid, [1-[butylamino)carbonyl]-1H-benzimidazol-2-yl]-,methyl ester
U280	101-27-9	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U373	122-42-9	Carbamic acid, phenyl-, 1-methylethyl ester
U409	23564-05-8	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-,dimethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U114	2111-54-6	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
U389	2303-17-5	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
U387	52888-80-9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester
U279	63-25-2	Carbaryl
U372	10605-21-7	Carbendazim
U367	1563-38-8	Carbofuran phenol
U215	6533-73-9	Carbonic acid, dithallium(1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester (I,T)
U033	353-50-4	Carbon oxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha & gamma isomers
U026	494-03-1	Chlornaphazin
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U039	59-50-7	p-Chloro-m-cresol
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt
U050	218-01-9	Chrysene
U051	.....	Creosote
U052	1319-77-3	Cresol (Cresylic acid)
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (I)
U246	506-68-3	Cyanogen bromide (CN)Br
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U056	110-82-7	Cyclohexane (I)
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta, 4alpha,5alpha,6beta)-
U057	108-94-1	Cyclohexanone (I)
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	50-18-0	Cyclophosphamide
U240	294-75-7	2,4-D, salts & esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a,h]anthracene
U064	189-55-9	Dibenzo[a,i]pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine
U074	764-41-0	1,4-Dichloro-2-butene (I,T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene
U025	111-44-4	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U024	111-91-1	Dichloromethoxy ethane
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2:3,4-Diepoxybutane (I,T)
U395	5952-26-1	Diethylene glycol, dicarbamate
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U086	1615-80-1	N,N'-Diethylhydrazine
U087	3288-58-2	O,O-Diethyl S-methyl dithiophosphate
U088	84-66-2	Diethyl phthalate
U089	56-53-1	Diethylstilbesterol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazobenzene
U094	57-97-6	7,12-Dimethylbenz[a]anthracene
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbamoyl chloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate
U108	123-91-1	1,4-Dioxane
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichlorohydrin
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U404	121-44-8	Ethanamine, N,N-diethyl
U155	91-80-5	1,2-Ethanediamine,N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	106-93-4	Ethane, 1,2-dibromo-
U076	75-34-3	Ethane, 1,1-dichloro-



<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U077	107-06-2	Ethane, 1,2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-
U117	60-29-7	Ethane, 1,1'-oxybis- (I)
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U184	76-01-7	Ethane, pentachloro-
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U410	59669-26-0	Ethanimidothioic acid, N,N'- [thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester
U394	30558-43-1	Ethanimidothioic acid, 2-(dimethylamino)-N- hydroxy-2-oxo-, methyl ester
U226	71-55-6	Ethane, 1,1,1-trichloro-
U227	79-00-5	Ethane, 1,1,2-trichloro-
U359	110-80-5	Ethanol, 2-ethoxy-
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-
U395	5952-26-1	Ethanol, 2,2'-oxybis-, dicarbamate
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1,1-dichloro-
U079	156-60-5	Ethene, 1,2-dichloro-, (E)
U210	127-18-4	Ethene, tetrachloro-
U228	79-01-6	Ethene, trichloro-
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate (urethane)
U117	60-29-7	Ethyl ether (I)
U114	2111-54-6	Ethylenebisdithiocarbamic acid, salts & esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I,T)
U116	96-45-7	Ethylenethiourea
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethyl methanesulfonate
U120	206-44-0	Fluoranthene

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan, tetrahydro- (I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitro-soureido)-, D-
U206	18883-66-4	D-Glucose, 2-deoxy-2-[(methylnitrosoamino)-carbonyl]amino]-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U135	7783-06-4	Hydrogen sulfide H <sub>2</sub> S
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-(R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3-cd]pyrene
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I,T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I,T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I,T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8- octachloro- 2,3,3a,4,7,7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta [cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methyl chlorocarbonate (I,T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I,T)
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil
U010	50-07-7	Mitomycin C
U059	20830-81-3	5,12-Naphthacenedione, 8-acetyl-10- [(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine, N,N'-bis(2-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl [1,1'-biphenyl]-4,4'-diyl)bis(azo)bis [5-amino-4-hydroxy]-, tetrasodium salt
U279	63-25-2	1-Naphthalenol, methylcarbamate
U166	130-15-4	1,4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid, thallium(1+) salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine,N,N-bis (2- chloroethyl)tetrahydro-, 2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
See F027	87-86-5	Pentachlorophenol
U161	108-10-1	Pentanol, 4-methyl-
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-
U081	120-83-2	Phenol, 2,4-dichloro-
U082	87-65-0	Phenol, 2,6-dichloro-
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)
U101	105-67-9	Phenol, 2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U411	114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate
U170	100-02-7	Phenol, 4-nitro-
See F027	87-86-5	Phenol, pentachloro-
See F027	58-90-2	Phenol, 2,3,4,6-tetrachloro-
See F027	95-95-4	Phenol, 2,4,5-trichloro-
See F027	88-06-2	Phenol, 2,4,6-trichloro-
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	7446-27-7	Phosphoric acid, lead(2+) salt (2:3)
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U083	78-87-5	Propane, 1,2-dichloro-
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I,T)
U027	108-60-1	Propane, 2,2'-oxybis[2-chloro-
U193	1120-71-4	1,3-Propane sultone
See F027	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U140	78-83-1	1-Propanol, 2-methyl- (I,T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propenamide
U084	542-75-6	1-Propene, 1,3-dichloro-
U243	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	107-13-1	2-Propenenitrile
U152	126-98-7	2-Propenenitrile, 2-methyl- (I,T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U373	122-42-9	Propham
U411	114-26-1	Propoxur
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U387	52888-80-9	Prosulfocarb
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-
U196	110-86-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl-
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	281-07-2	Saccharin, & salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS <sub>2</sub> (R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
See F027	93-72-1	Silvex (2,4,5-TP)
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
See F027	93-76-5	2,4,5-T
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
See F027	58-90-2	2,3,4,6-Tetrachlorophenol
U213	109-99-9	Tetrahydrofuran (I)
U214	563-68-8	Thallium(I) acetate
U215	6533-73-9	Thallium(I) carbonate
U216	7791-12-0	Thallium(I) chloride
U216	7791-12-0	Thallium chloride TlCl
U217	10102-45-1	Thallium(I) nitrate
U218	62-55-5	Thioacetamide
U410	59669-26-0	Thiodicarb
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonic diamide [(H <sub>2</sub> N)C(S)] <sub>2</sub> S <sub>2</sub> , tetramethyl-
U409	23564-05-8	Thiophanate-methyl
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U389	2303-17-5	Triallate
U011	61-82-5	1H-1,2,4-Triazol-3-amine
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
See F027	95-95-4	2,4,5-Trichlorophenol
See F027	88-06-2	2,4,6-Trichlorophenol
U404	121-44-8	Triethylamine
U234	99-35-4	1,3,5-Trinitrobenzene (R,T)
U182	123-63-7	1,3,5-Trioxane, 2,4,6-trimethyl-

<b>TABLE 3-6B.2(c)(6) TOXIC WASTES (T)</b>		
<b>USEPA HW No.<sup>1</sup></b>	<b>CAS NO.</b>	<b>Substance</b>
U235	126-72-7	Tris(2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, N-ethyl-N-nitroso-
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	281-81-2	Warfarin, & salts, when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic acid, 11,17- dimethoxy-18-[(3,4,5-trimethoxybenzoyl) oxy]-,methyl ester,(3beta,16beta,17alpha,18beta, 20alpha)-
U249	1314-84-7	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations of 10% or less
<p>Note: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letter "T" (Toxicity), "R" (Reactivity), "I" (Ignitability), and "C" (Corrosivity). Absence of a letter indicates that the compound is listed only for toxicity.</p> <p><sup>1</sup> USEPA Hazardous Waste Number</p> <p><sup>2</sup> CAS Number given for parent compound only.</p> <p>The substances in this table are subject to the provisions of Section 2-22. [CFR parent table 261.33(f) table revised at 60 FR 7848, Feb. 9, 1995; corrected at 60 FR 19165, 4/17/95; 62 FR 32977, 6/17/97; 63 FR 24625, 5/4/98, effective 11/4/98]</p>		



**APPENDIX 3-6C**  
**HAZARDOUS MATERIALS LIST**

[Note: All comments and notes are at the end of this table]

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Acenaphthene	83329	---	100
Acenaphthylene	208968	---	5000
Acetaldehyde	75070	U001	1000
Acetaldehyde, chloro-	107200	P023	1000
Acetaldehyde, trichloro-	75876	U034	5000
Acetamide	60355		100
Acetamide, N-(aminothioxomethyl)-	591082	P002	1000
Acetamide, N-(4-ethoxyphenyl)-	62442	U187	100
Acetamide, 2-fluoro-	640197	P057	100
Acetamide, N-9H-fluoren-2-yl-	53963	U005	1
Acetic acid	64197	---	5000
Acetic acid (2,4-dichlorophenoxy)-	94757	U240	100
Acetic acid, lead(2+) salt	301042	U144	10
Acetic acid, thallium(1+) salt	563688	U214	100
Acetic acid, (2,4,5-trichlorophenoxy)	93765	U232	1000
Acetic acid, ethyl ester	141786	U112	5000
Acetic acid, fluoro-, sodium salt	62748	P058	10
Acetic anhydride	108247	---	5000
Acetone	67641	U002	5000
Acetone cyanohydrin	75865	P069	10
Acetonitrile	75058	U003	5000
Acetophenone	98862	U004	5000
2-Acetylaminofluorene	53963	U005	1
Acetyl bromide	506967	---	5000
Acetyl chloride	75365	U006	5000
1-Acetyl-2-thioures	591082	P002	1000
Acrolein	107028	P003	1
Acrylamide	79061	U007	5000
Acrylic acid	79107	U008	5000
Acrylonitrile	107131	U009	100
Adipic acid	124049	---	5000
Aldicarb	116063	P070	1
Aldrin	309002	P004	1
Allyl alcohol	107186	P005	100
Allyl chloride	107051	---	1000

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Aluminum phosphide	20859738	P006	100
Aluminum sulfate	10043013	---	5000
4-Aminobiphenyl	92671		1
5-(Aminomethyl)-3-isoxazolol	2763964	P007	1000
4-Aminopyndine	504245	P008	1000
Amitrole	61825	U011	10
Ammonia	7664417	---	100
Ammonium acetate	631618	---	5000
Ammonium benzoate	1863634	---	5000
Ammonium bicarbonate	1066337	---	5000
Ammonium bichromate	7789095	---	10
Ammonium bifluoride	1341497	---	100
Ammonium bisulfite	10192300	---	5000
Ammonium carbamate	1111780	---	5000
Ammonium cabonate	506876	---	5000
Ammonium chloride	12125029	---	5000
Ammonium chromate	7788989	---	10
Ammonium citrate, dibasic	3012655	---	5000
Ammonium fluoborate	13826830	---	5000
Ammonium fluoride	12125018	---	100
Ammonium hydroxide	1336216	---	1000
Ammonium oxalate	6009707 5972736 14258492	--- --- ---	5000
Ammonium picrate	131748	P009	10
Ammonium silicofluoride	16919190	---	1000
Ammonium sulfamate	7773060	---	5000
Ammonium sulfide	12135761	---	100
Ammonium sulfite	10196040		5000
Ammonium tartrate	14307438 3164292	--- ---	5000
Ammonium thiocyanate	1762954	---	5000
Ammonium vanadate	7803556	P119	1000
Amyl acetate	628637	---	5000
iso-Amyl acetate	123922	---	
sec-Amyl acetate	626380	---	
tert-Amyl acetate	625161	---	
Aniline	62533	U012	5000
o-Anisidine	90040		100

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Anthracene	120127	---	5000
Antimony ++	7440360	---	5000
ANTIMONY AND COMPOUNDS	NA	---	**
Antimony pentachloride	7647189	---	1000
Antimony potassium tartrate	28300745	---	100
Antimony tribromide	7789619	---	1000
Antimony trichloride	10025919	---	1000
Antimony trifluoride	7783564	---	1000
Antimony trioxide	1309644	---	1000
Argentate(1-), bis(cyano-C)-, potassium	506616	P099	1
Aroclor 1016	12674112	---	1
Aroclor 1221	11104282	---	1
Aroclor 1232	11141165	---	1
Aroclor 1242	53469219	---	1
Aroclor 1248	12672296	---	1
Aroclor 1254	11097691	---	1
Aroclor 1260	11096825	---	1
Aroclors	1336363		1
Arsenic ++	7440382	---	1
Arsenic acid	1327522 7778394	P010 ---	1
Arsenic acid H <sub>3</sub> AsO <sub>4</sub>	1327522 7778394	P010 ---	1
ARSENIC AND COMPOUNDS	NA	---	**
Arsenic disulfide	1303328	---	1
Arsenic oxide As <sub>2</sub> O <sub>3</sub>	1327533	P012	1
Arsenic oxide As <sub>2</sub> O <sub>5</sub>	1303282	P011	1
Arsenic pentoxide	1303282	P011	1
Arsenic trichloride	7784341	---	1
Arsenic trioxide	1327533	P012	1
Arsenic trisulfide	1303339	---	1
Arsine, diethyl-	692422	P038	1
Arsinic acid, dimethyl-	75605	U136	1
Arsorous dichloride, phenyl-	696286	P036	1
Asbestos +++	1332214	---	1
Auramine	492808	U014	100
Azaserine	115026	U015	1
Azindine	151564	P054	1
Azindine, 2-methyl-	75558	P067	1

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Azirino[2',3',3,4]pyrrolo[1,2-a]indole-4, 7-dione,6-amino-8-[[[(aminocarbonyl)oxy] methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta, 8aalpha, 8balpha)]-]	50077	U010	10
Barium cyanide	542621	P013	10
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	56495	U157	10
Benz[c]acridine	225514	U016	100
Benzal chloride	98873	U017	5000
Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	23950585	U192	5000
Benz[a]anthracene	56553	U018	10
1,2-Benzanthracene	56553	U018	10
Benz[a]anthracene, 7,12-dimethyl-	57976	U094	1
Benzenamine	62533	U012	5000
Benzenamine, 4,4'-carbonimidoylbis (N,N dimethyl-	492808	U014	100
Benzenamine, 4-chloro-	106478	P024	1000
Benzenamine, 4-chloro-2-methyl-, hydrochloride	3165933	U049	100
Benzenamine, N,N-dimethyl-4-(phenylazo-)	60117	U093	10
Benzenamine, 2-methyl-	95534	U328	100
Benzenamine, 4-methyl-	106490	U353	100
Benzenamine, 4,4'-methylenebis(2-chloro-	101144	U158	10
Benzenamine, 2-methyl-, hydrochloride	636215	U222	100
Benzenamine, 2-methyl-5-nitro-	99558	U181	100
Benzenamine, 4-nitro-	100016	P077	5000
Benzene <sup>a</sup>	71432	U109	10
Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester	510156	U038	10
Benzene, 1-bromo-4-phenoxy-	101553	U030	100
Benzenebutanoic acid, 4-[bis(2-chloroethyl) amino]-	305033	U035	10
Benzene, choro-	108907	U037	100
Benzene, chloromethyl-	100447	P028	100
Benzenediamin, ar-methyl-	95807	U221	10
	496720	---	
	823405	---	
	25376458		

TABLE 3-6C HAZARDOUS MATERIALS*			
Hazardous Substance	CAS No.	USEPA Waste No.	Final RQ (Pounds)
1,2-Benzenedicarboxylic acid, dioctyl ester	117840	U107	5000
1,2-Benzenedicarboxylic acid, [bis(2-ethylhexyl)]-ester	117817	U028	100
1,2-Benzenedicarboxylic acid, dibutyl ester	84742	U069	10
1,2-Benzenedicarboxylic acid, diethyl ester	84662	U088	1000
1,2-Benzenedicarboxylic acid, dimethyl ester	131113	U102	5000
Benzene, 1,2-dichloro-	95501	U070	100
Benzene, 1,3-dichloro-	541731	U071	100
Benzene, 1,4-dichloro-	106467	U072	100
Benzene, 1,1'-(2,2-dichloroethylidene)bis [4-chloro-	72548	U060	1
Benzene, dichloromethyl-	98873	U017	5000
Benzene, 1,3-diisocyanotomethyl-	584849	U223	100
	91087	---	
	26471625	---	
Benzene, dimethyl	1330207	U239	100
m-Benzene, dimethyl	108383	---	1000
o-Benzene, dimethyl	95476	---	1000
p-Benzene, dimethyl	106423	---	100
1,3-Benzenediol	108463	U201	5000
1,2-Benzenedio, 4-[1-hydroxy-2-(methylamino)ethyl]-	51434	P042	1000
Benzeneethanamine, alpha, alpha-dimethyl-	122098	P046	5000
Benzene, hexachloro-	118741	U127	10
Benzene, hexahydro-	110827	U056	1000
Benzene, hydroxy-	108952	U188	1000
Benzene, methyl-	108883	U220	1000
Benzene, 2-methyl-1,3-dinitro-	606202	U106	100
Benzene, 1-methyl-2,4-dinitro-	121142	U105	10
Benzene, 1-methylethyl-	98828	U055	5000
Benzene, nitro-	98953	U169	1000
Benzene, pentachloro-	608935	U183	10
Benzene, pentachloronitro-	82688	U185	100
Benzenesulfonic acid chloride	98099	U020	100
Benzenesulfonyl chloride	98099	U020	100
Benzene, 1,2,4,5-tetrachloro-	95943	U207	5000
Benzenethiol	108985	P014	100
Benzene, 1,1'-(2,2,2-tri-chloroethylidene)bis [4-chloro-	50293	U061	1

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Benzene, 1,1'-(2,2,2-trichloro-ethylidene) bis[4-methoxy-	72435	U247	1
Benzene, (trichloromethyl)-	98077	U023	10
Benzene, 1,3,5-trinitro-	99354	U234	10
Benzidine	92875	U021	1
1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide	81072	U202	100
Benzo[a]anthracene	56553	U018	10
Benzo[b]fluoranthene	205992	---	1
Benzo[k]fluoranthene	207089	---	5000
Benzo[j,k]fluorene	206440	U120	100
1,3-Benzodioxol-4-ol,2,2-dimethyl, (Bendiocarbphenol)	22961826	U364	## 1
1,3-Benzodioxol-4-ol,2,2-dimethyl-,methyl carbamate (Bendiocarb)	22781233	U278	## 1
1,3-Benzodioxole, 5-(1-propenyl)-	120581	U141	100
1,3-Benzodioxole, 5-(2-propenyl)-	94597	U203	100
1,3-Benzodioxole, 5-(1 propenyl)-	94586	U090	10
7-Benzofuranol,2,3-di-hydro-2,2-dimethyl-hydro-2,2-dimethyl-(Carbofuranphenol)	1563388	U367	## 1
Benzoic acid	65850	---	5000
Benzoic acid, 2-hydroxy-,compd. with (3aS-cis)- 1,2,3,3a,8,8a-hexahydro-1,3a, 8-trimethyl-pyrrolo[2,3b]indol-5-yl methyl-carbamate ester (1:1)	57647	P188	## 1
Benzonitrile	100470	---	5000
Benzo[rst]pentaphene	189559	U064	10
Benzo[ghi]perylene	191242	---	5000
2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, and salts, when present at concentrations greater than 0.3 percent	81812	P001	100
Benzo[a]pyrene	50328	U022	1
3,4-Benzopyrene	50328	U022	1
p-Benzoquinone	106514	U197	10
Benzotrichloride	98077	U023	10
Benzoyl chloride	98884	---	1000
1,2-Benzphenanthrene	218019	U050	100
Benzyl chloride	100447	P028	100
Beryllium ++	7440417	P015	10
BERYLLIUM AND COMPOUNDS	NA	---	**

TABLE 3-6C HAZARDOUS MATERIALS*			
Hazardous Substance	CAS No.	USEPA Waste No.	Final RQ (Pounds)
Beryllium chloride	7787475	---	1
Beryllium dust ++	7440417	P015	10
Beryllium fluoride	7787497	---	1
Beryllium nitrate	13597994 7787555	---	1
alpha-BHC	319846	---	10
beta-BHC	319857	---	1
delta-BHC	319868	---	1
gamma-BHC	58899	U129	1
2,2'-Bioxirane	1464535	U085	10
Biphenyl	92524		100
(1,1'-Biphenyl)-4,4'diamine	92875	U021	1
(1,1'-Biphenyl)-4,4'diamine, 3,3'dichloro-	91941	U073	1
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethoxy-	119904	U091	100
(1,1'-Biphenyl)-4,4'diamine, 3,3'diamethyl-	119937	U095	10
Bis(2-chloroethyl)ether	111444	U025	10
Bis(2-chloroethoxy)methane	111911	U024	1000
Bis(2-ethylhexyl)phthalate	117817	U028	100
Bromoacetone	598312	P017	1000
Bromoform	75252	U225	100
4-Bromophenyl phenyl ether	101553	U030	100
Brucine	357573	P018	100
1,3-Butadiene	106990		10
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87683	U128	1
1-Butanamine, N-butyl-N-nitroso-	924163	U172	10
1-Butanol	71363	U031	5000
2-Butanone	78933	U159	5000
2-Butanone peroxide	1338234	U160	10
2-Butanone, 3,3-dimethyl-1-(methylthio)-, O[(methylamino) carbonyl] oxime	3916184	P045	100
2-Butenal	123739 4170303	U053	100
2-Butene, 1,4-dichloro-	764410	U074	1
2-Butenoic acid, 2-methyl-, 7[[2, 3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy] methyl]-2,3,5,7a-tetrahydro-1H-pyrro-lizin-1-yl ester, [1S-[1alpha (Z), 7(2S*, 3R*), 7aalpha]]-	303344	U143	10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Butyl acetate	123864	---	5000
iso-Butyl acetate	110190	---	
sec-Butyl acetate	105464	---	
tert-Butyl acetate	540885	---	
n-Butyl alcohol	71363	U031	5000
Butylamine	109739	---	1000
iso-Butylamine	78819	---	
sec-Butylamine	513495	---	
	13952846	---	
tert-Butylamine	75649	---	
Butyl benzyl phthalate	85687	---	100
n-Butyl phthalate	84742	U069	10
Butyric acid	107926	---	5000
iso-Butyric acid	79312	---	
Cacodylic acid	75605	U136	1
Cadmium ++	7440439	---	10
Cadmium acetate	543908	---	10
CADMIUM AND COMPOUNDS	NA	---	**
Cadmium bromide	7789426	---	10
Cadmium chloride	10108642	---	10
Calcium arsenate	7778441	---	1
Calcium arsenite	52740166	---	1
Calcium carbide	75207	---	10
Calcium chromate	13765190	U032	10
Calcium cyanamide	156627		1000
Calcium cyanide	592018	P021	10
Calcium cyanide Ca(CN) <sub>2</sub>	592018	P021	10
Calcium dodecylbenzenesulfonate	26264062	---	1000
Calcium hypochlorite	7778543	---	10
Camphene, octachloro-	8001352	P123	1
Captan	133062	---	10
Carbamic acid, [1-[(butylamino) carbonyl]- 1H-benzimidazol-2-yl, methyl ester (Benomyl)	17804352	U271	## 1
Carbamic acid, 1H-benzimidazol-2-yl, methyl ester (Carbendazim)	1605217	U372	## 1
Carbamic acid,(3-chlorophenyl)-,4-chloro- 2-butynyl ester (Barban)	101279	U280	## 1



<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Carbamic acid, [(dibutyl-amino)thio] methyl-,2, 3-dihydro-2,2-dimethyl-7-benzofuranyl ester (Carbosulfan)	55285148	P189	## 1
Carbamic acid,dimethyl-,1-[(dimethylamino) carbonyl]-5-methyl-1H-pyrazol-3-yl ester (Dimetilan)	644644	P191	## 1
Carbamic acid,dimethyl-,3-methyl-1- (1-methylethyl)-1H-pyrazol-5-yl ester (Isolan)	119380	P192	## 1
Carbamic acid, ethyl ester	51796	U238	100
Carbamic acid,methyl-,3-methylphenyl ester (Metolcarb)	1129415	P190	## 1
Carbamic acid, methylnitroso-, ethyl ester	615532	U178	1
Carbamic acid, [1,2-phenylenebis (imino-carbonothioy)]bis-, di-methyl ester (Thiophanatemethyl)	23564058	U409	## 1
Carbamic acid,phenyl-,1-methylethyl ester (Propham)	122429	U373	## 1
Carbamic chloride, dimethyl-	79447	U097	1
Carbamodithioic acid, 1,2-ethaneiyllbis, salts and esters	111546	U114	5000
Carbamothioic acid, bis(1-methylethyl)-,S-(2,3-dichloro-2-propenyl) ester	2303164	U062	100
Carbamothioic acid, bis(1-methylethyl)- S-(2,3,3-trichloro-2-propenyl) ester (Triallate)	2303175	U389	## 1
Carbamothioic acid, dipropyl-, S - (phenylmethyl) ester (Prosulfocarb)	52888809	U387	## 1
Carbaryl	63252	---	100
Carbofuran	1563662	---	10
Carbon disulfide	75150	P022	100
Carbon oxyfluoride	353504	U033	1000
Carbon tetrachloride	56235	U211	10
Carbonic acid, dithallium(1+) salt	6533739	U215	100
Carbonic dichloride	75445	P095	10
Carbonic difluoride	353504	U033	1000
Carbonochloridic acid, methyl ester	79221	U156	1000
Carbonyl sulfide	463581		100
Catechol	120809		100
Chloral	75876	U034	5000
Chloramben	133904		100
Chlorambucil	305033	U035	10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Chlordane	57749	U036	1
CHLORDANE (TECHNICAL MIXTURE AND METABOLITES)	NA	---	**
Chlordane, alpha and gamma isomers	57749	U036	1
Chlordane, technical	57749	U036	1
CHLORINATED BENZENES	NA	---	**
Chlorinated camphene	8001352	1923	1
CHLORINATED ETHANES	NA	---	**
CHLORINATED NAPHTHALENE	NA	---	**
CHLORINATED PHENOLS	NA	---	**
Chlorine	7782505	---	10
Chlornaphazine	494031	U026	100
Choroacetaldehyde	107200	P023	1000
Chloroacetic acid	79118		100
2-Chloroacetophenone	532274		100
CHLOROALKYL ETHERS	NA	---	**
p-Chloroaniline	106478	P024	1000
Chlorobenzene	108907	U037	100
Chlorobenzilate	510156	U038	10
4-Chloro-m-cresol	59507	U039	5000
p-Chloro-m-cresol	59507	U039	5000
Chlorodibromomethane	124481	---	100
Chloroethane	75003	---	100
1-Chloro-2,3-epoxypropane	106898	U041	100
2-Chloroethyl vinyl ether	110758	U042	1000
Chloroform	67663	U044	10
Chloromethane	74873	U045	100
Chloromethyl methyl ether	107302	U046	10
beta-Chloronaphthalene	91587	U047	5000
2-Chloronaphthalene	91587	U047	5000
2-Chlorophenol	95578	U048	100
o-Chlorophenol	95578	U048	100
4-Chlorophenol phenyl ether	7005723	---	5000
1-(o-Chlorophenyl)thiourea	5344821	P026	100
Chloroprene	126998		100
3-Chloropropionitrile	542767	P027	1000
Chlorosulfonic acid	7790945	---	1000
4-Chloro-o-toluidine, hydrochloride	3165933	U049	100
Chlorpyrifos	2921882	---	1

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Chromic acetate	1066304	---	1000
Chromic acid	11115745 7738945	---	10
Chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt	13765190	U032	10
Chromic sulfate	10101538	---	1000
Chromium ++	7440473	---	5000
CHROMIUM AND COMPOUNDS	NA	---	**
Chromous chloride	10049055	---	1000
Chrysene	218019	U050	100
COBALT COMPOUNDS	NA	---	**
Cobaltous bromide	7789437	---	1000
Cobaltous formate	544183	---	1000
Cobaltous sulfamate	14017415	---	1000
Coke Oven Emissions	NA	---	1
Copper cyanide CuCN	544923	P029	10
Copper ++	7440508		5000
COPPER AND COMPOUNDS	NA		**
Copper cyanide	544923	P029	10
Coumaphos	56724	---	10
Creosote	8001589	U051	1
Cresol(s)	1319773	U052	100
m-Cresol	108394	---	100
o-Cresol	95487	---	100
p-Cresol	106445	---	100
Cresylic acid	1319773	U052	100
m-Cresol	108394	---	100
o-Cresol	95487	---	100
p-Cresol	106445	---	100
Crotonaldehyde	123739 4170303	U053 ---	100
Cumene	98828	U055	5000
Cupric acetate	142712	---	100
Cupric acetoarsenite	12002038	---	1
Cupric chloride	7447394	---	10
Cupric nitrate	3251238	---	100
Cupric oxalate	5893663	---	100
Cupric sulfate	7758987	---	10
Cupric sulfate, ammoniated	10380297	---	100
Cupric tartrate	815827	---	100

TABLE 3-6C HAZARDOUS MATERIALS*			
Hazardous Substance	CAS No.	USEPA Waste No.	Final RQ (Pounds)
Cyanide Compounds	NA		**
CYANIDES	NA	---	**
Cyanides (soluble salts and complexes) not otherwise specified	57125	P030	10
Cyanogen	460195	P031	100
Cyanogen bromide	506683	U246	1000
Cyanogen bromide CNBr	506683	U246	1000
Cyanogen chloride	506774	P033	10
Cyanogen chloride CNCl	506774	P033	10
2,5-Cyclohexadiene-1,4-dione	106514	U197	10
Cyclohexane	110827	U056	1000
Cyclohexane, 1,2,3,4,5,6-hexachloro, (1alpha, 2alpha, 3beta, 4alpha, 5alpha, 6beta)-	58899	U129	1
Cyclohexanone	108941	U057	5000
2-Cuclohexyl-4-6-dinitrophenol	131895	P034	100
1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77474	U130	10
Cyclophosphamide	50180	U058	10
2,4-D Acid	94757	U240	100
2,4-D Ester	94111	---	100
	94791	---	
	94804	---	
	1320189	---	
	1928387	---	
	1928616	---	
	1929733	---	
	2971382	---	
	25168267	---	
	53467111	---	
2,4-D, including salts and esters	94757	U240	100
Daunomycin	20830813	U059	10
DDD	72548	U060	1
4,4'DDD	72548	U060	1
DDE	72559	---	1
4,4'DDE	72559	---	1
DDE <sup>b</sup>	3547044	D	5000
DDT	50293	U061	1
4,4'DDT	50293	U061	1
DDT AND METABOLITES	NA	---	**
DEHP	117817	U028	100

TABLE 3-6C HAZARDOUS MATERIALS*			
Hazardous Substance	CAS No.	USEPA Waste No.	Final RQ (Pounds)
Diallate	2303164	U062	100
Diazinon	333415	---	1
Diazomethane	334883		100
Dibenz[a,h]anthracene	53703	U063	1
1,2:5,6-Dibenzanthracene	53703	U063	1
Dibenzo[a,h]anthracene	53703	U063	1
Dibenzofuran	132649		100
Dibenz[a,i]pyrene	189559	U064	10
1,2-Dibromo-3-chloropropane	96128	U066	1
Dibromoethane	106934	U067	1
Dibutyl phthalate (Di-n-butyl phthalate)	84742	U069	10
Dicamba	1918009	---	1000
Dichlobenil	1194656	---	100
Dichlone	117806	---	1
Dichlorobenzene	25321226	---	100
1,2-Dichlorobenzene	95501	U070	100
1,3-Dichlorobenzene	541731	U071	100
1,4-Dichlorobenzene	106467	U072	100
m-Dichlorobenzene	541731	U071	100
o-Dichlorobenzene	95501	U070	100
p-Dichlorobenzene	106467	U072	100
DICHLOROBENIDINE	NA	---	**
3,3'-Dichlorobenzidine	91941	U073	1
Dichlorobromomethane	75274	---	5000
1,4-Dichloro-2-butene	764410	U074	1
Dichlorodifluoromethane	75718	U075	5000
1,1-Dichloroethane	75343	U076	1000
1,2-Dichloroethane	107062	U077	100
1,1-Dichloroethylene	75354	U078	100
1,2-Dichloroethylene	156605	U079	1000
Dichloroethyl ether	11444	U025	10
Dichloroisopropyl ether	108601	U027	1000
Dichloromethane	75092	U080	1000
Dichloromethoxy ethane	111911	U024	1000
Dichloromethyl ether	542881	P016	10
2,4-Dichlorophenol	120832	U081	100
2,6-Dichlorophenol	87650	U082	100
Dichlorophenylarsine	696286	P036	1

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Dichloropropane	26638197	---	1000
1,1-Dichloropropane	78999	---	
1,3-Dichloropropane	142289	---	
1,2-Dichloropropane	78875	U083	1000
Dichloropropane--Dichloropropene (mixture)	8003198	---	100
Dichloropropene	26952238	---	100
2,3-Dichloropropene	78886	---	
1,3-Dichloropropene	542756	U084	100
2,2-Dichloropropionic acid	75990	---	5000
Dichlorvos	62737	---	10
Dicofol	115322	---	10
Dieldrin	60571	P037	1
1,2:3,4-Diepoxybutane	1464535	U085	10
Diethanolamine	111422		100
Diethylamine	109897	---	100
Diethylarsine	692422	P038	1
1,4-Diethylenedioxide	123911	U108	100
1,4-Diethyleneoxide	123911	U108	100
Diethylhexyl phthalate	117817	U028	100
N,N-Diethylaniline	91667		1000
N,N-Diethylhydrazine	1615801	U086	10
O,O-Diethyl S-methyl dithiophosphate	3288582	U087	5000
Diethyl-p-nitrophenyl phosphate	311455	P041	100
Diethyl phthalate	84662	U088	1000
O,O-Diethyl O-pyrazinyl phosphorothioate	297972	P040	100
Diethylstilbestrol	56531	U089	1
Diethyl sulfate	64675		10
Dihydrosafrole	94586	U090	10
Diisopropyl fluorophosphate	55914	P043	100
1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10, 10-10-hexa-chloro-1,4,4a,5,8,8a-hexahydro-(1alpha, 4alpha, 4abeta, 5alpha, 8alpha,8abeta)	309002	P004	1
1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a-hexahydro, (1alpha, 4alpha, 4abeta, 5abeta, 8beta,8abeta)	465736	P060	1
2,7:3,6-Dimethanonaphth[2,3b] oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-,(1aalpha, 2beta, 2aalpha, 3beta,6beta,6aalpha, 7beta,7aalpha)-	60571	P037	1

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
2,7:3,6 Dimethanonaphth[2,3b] oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octa-hydro-, (1alpha, 2beta, 2abeta, 3alpha, 6alpha,6abeta, 7beta, 7aalpha)	72206	P051	1
Dimethoate	60515	P044	10
3,3'-Dimethoxybenzidine	119904	U091	100
Dimethylamine	124403	U092	1000
Dimethyl aminoazobenzene	60117	U093	10
p-Dimethylaminoazobenzene	60117	U093	10
N,N-Dimethylaniline	121697	---	100
7,12-Dimethylbenz[a]anthracene	57976	U094	1
3,3'-Dimethylbenzidine	119937	U095	10
alpha, alpha-Dimethylbenzylhydroperoxide	80159	U096	10
Dimethylcarbamoylchloride	79447	U097	1
Dimethylformamide	68122		100
1,1-Dimethylhydrazine (UDMH)	57147	U098	10
1,2-Dimethylhydrazine	540738	U099	1
alpha, alpha-Dimethylphenethylamine	122098	P046	5000
2,4-Dimethylphenol	105679	U101	100
Dimethyl phthalate	131113	U102	5000
Dimethyl sulfate	77781	U103	100
Dinitrobenzene (mixed)	25154545	---	100
m-Dinitrobenzene	99650	---	100
o-Dinitrobenzene	528290	---	100
p-Dinitrobenzene	100254	---	100
4,6-Dinitro-o-cresol and salts	534521	P047	10
Dinitrophenol	25550587	---	10
2,5-Dinitrophenol	329715	---	
2,6-Dinitrophenol	573568	---	
2,4-Dinitrophenol	51285	P048	10
Dinitrotoluene	25321146	---	10
3,4-Dinitrotoluene	610399	---	
2,4-Dinitrotolueno	121142	U105	10
2,6-Dinitrotoluene	606202	U106	100
Dinoseb	88857	P020	1000
Di-n-octyl phthalate	117840	U107	5000
1,4-Dioxane	123911	U108	100
DIPHENYLHYDRAZINE	NA	---	**
1,2-Diphenylhydrazine	122667	U109	10
Diphosphoramide, octamethyl-	152169	P085	100

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Diphosphoric acid, tetraethyl ester	107493	P111	10
Dipropylamine	142847	U110	5000
Di-n-propylnitrosamine	621647	U111	10
Diquat	85007 2764729	--- ---	1000
Disulfoton	298044	P039	1
Dithiobiuret	541537	P049	100
1,3-Dithiolane-2-carbox-aldehyde, 2, 4-dimethyl-, 0-[(methyl-amino) carbonyl]oxime (Tirpate)	26419738	P185	## 1
Diuron	330541	---	100
Dodecylbenzenesulfonic acid	27176870	---	1000
Endosulfan	115297	P050	1
alpha-Endosulfan	959988	---	1
beta-Endosulfan	33213659	---	1
ENDOSULFAN AND METABOLITES	NA	---	**
Endosulfant sulfate	1031078	---	1
Endothall	145733	P088	1000
Endrin	72208	P051	1
Endrin aldehyde	742934	---	1
ENDRIN AND METABOLITES	NA	---	**
Endrin and metabolites	72208	P051	1
Epichlorohydrin	106898	U041	100
Epinephrine	51434	P042	1000
1,2-Epoxybutane	106887		100
Ethanal	75070	U001	1000
Ethanamine, N-ethyl-N-nitroso-	55185	U174	1
1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	91805	U155	5000
Ethane, 1,2-dibromo-	106934	U067	1
Ethane, 1,1-dichloro-	75343	U076	1000
Ethane, 1,2-dichloro-	107062	U077	100
Ethanedinitrile	460195	P031	100
Ethane, hexachloro-	67721	U131	100
Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-	111911	U024	1000
Ethane, 1,1'-oxybis-	60297	U117	100
Ethane, 1,1'-oxybis(2-chloro-	111444	U025	10
Ethane, pentachloro-	76017	U184	10
Ethane, 1,1,1,2-tetrachloro-	630206	U208	100



<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Ethane, 1,1,2,2-tetrachloro-	79345	U209	100
Ethanethioamide	62555	U218	10
Ethane, 1,1,1-trichloro-	71556	U226	1000
Ethane, 1,1,2-trichloro-	79005	U227	100
Ethanimidothioic acid, 2-(dimethylamino- N-hydroxy-2-oxo-,methyl ester (A2213)	30558431	U394	## 1
Ethanimidothioic acid, 2-(dimethylamino- N-[[ (methylamino)carbonyl]oxy]-2-oxo-,methyl ester (Oxamyl)	23135220	P194	## 1
Ethanimidothioic acid, N,N'-[thiobis [(methylimino)carbonyloxy]]bis-, dimethyl ester(Thiodicarb)	59669260	U410	## 1
Ethanimidothioic acid, N-[[ (methylamino) carbonyl]oxy]-, methyl ester	16752775	P066	100
Ethanol,2,2'-oxybis-,dicarbamate (Diethylene glycol, dicarbamate)	5952261	U395	## 1
Ethanol, 2-ethoxy-	110805	U359	1000
Ethanol, 2,2'-(nitrosoimino)bis-	1116547	U173	1
Ethanone, 1-phenyl-	98862	U004	5000
Ethene, chloro-	75014	U043	1
Ethene, 2-chloroethoxy-	110758	U042	1000
Ethene, 1,1-dichloro-	75354	U078	100
Ethene, 1,2-dichloro- (E)	156605	U079	1000
Ethene, tetrachloro-	127184	U210	100
Ethene, trichloro-	79016	U228	100
Ethion	563122	---	10
Ethyl acetate	141786	U112	5000
Ethyl acrylate	140885	U113	1000
Ethylbenzene	100414	---	1000
Ethyl carbamate (urethane)	51796	U238	100
Ethyl chloride	75003		100
Ethyle cyanide	107120	P101	10
Ethylenebisdithiocarbamic acid, including salts and esters	111546	U114	5000
Ethylenediamine	107153	---	5000
Ethylenediamine-tetraacetic acid (EDTA)	60004	---	5000
Ethylene dibromide	106934	U067	1
Ethylene dichloride	107062	U077	100
Ethylene glycol	107211		5000

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Ethylene glycol monoethyl ether	110805	U359	1000
Ethylene oxide	75218	U115	10
Ethylenethiourea	96457	U116	10
Ethylenimine	151564	P054	1
Ethyl ether	60297	U117	100
Ethylidene dichloride	75343	U076	1000
Ethyl methacrylate	97632	U118	1000
Ethyl methanesulfonate	62500	U119	1
Famphur	52857	P097	1000
Ferric ammonium citrate	1185575	---	1000
Ferric ammonium oxalate	2944674 55488874	---	1000
Ferric chloride	7705080	---	1000
Ferric fluoride	7783508	---	100
Ferric nitrate	10421484	---	1000
Ferric sulfate	10028225	---	1000
Ferrous ammonium sulfate	10045893	---	1000
Ferrous chloride	7758943	---	100
Ferrous sulfate	7720787 7782630	---	1000
Fine mineral fibers <sup>c</sup>	NA		**
Fluoranthene	206440	U120	100
Fluorene	86737	---	5000
Fluorine	7782414	P056	10
Fluoroacetamide	640197	P057	100
Fluoroacetic acid, sodium salt	62786	P058	10
Formaldehyde	50000	U122	100
Formic acid	64186	U123	5000
Fulminic acid, mercury(2+) salt	628864	P065	10
Fumaric acid	110178	---	5000
Furan	110009	U124	100
Furan, tetrahydro-	109999	U213	1000
2-Furancarboxaldehyde	98011	U125	5000
2,5-Furandione	108316	U147	5000
Furfural	98011	U125	5000
Furfuran	110009	U124	100
Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-	18883664	U206	1

TABLE 3-6C HAZARDOUS MATERIALS*			
Hazardous Substance	CAS No.	USEPA Waste No.	Final RQ (Pounds)
D-Glucose, 2-deoxy-2-[[[(methylnitrosomaino)-carbonyl]amino]-	18883664	U206	1
Glycol ethers <sup>d</sup>	NA		**
Glycidylaldehyde	765344	U126	10
Guanidine, N-methyl-N'-nitro-N-nitroso-	70257	U163	10
Guthion	86500	---	1
HALOETHERS	NA	---	**
HALOMETHANES	NA	---	**
Heptachlor	76448	P059	1
HEPTACHLOR AND METABOLITES	NA	---	**
Heptachlor epoxide	1024573	---	1
Hexachlorobenzene	118741	U127	10
Hexachlorobutadiene	87683	U128	1
HEXACHLOROCYCLOHEXANE (all isomers)	608731	---	**
Hexachlorocyclohexane (gamma isomer)	58899	U129	1
Hexachlorocyclopentadiene	77474	U130	10
Hexachloroethane	67721	U131	100
Hexachlorophene	70304	U132	100
Hexachloropropene	1888717	U243	1000
Hexaethyl tetraphosphate	757584	P062	100
Hexamethylene-1,6-diisocyanate	82206		100
Hexamethylphosphoramide	680319		1
Hexane	110543		5000
Hexone	108101	U161	5000
Hydrazine	302012	U133	1
Hydrazine, 1,2-diethyl-	1615801	U086	10
Hydrazine, 1,1-dimethyl-	57147	U098	10
Hydrazine, 1,2-dimethyl	540738	U099	1
Hydrazine, 1,2-diphenyl-	122667	U109	10
Hydrazine, methyl-	60344	P068	10
Hydrazinecarbothioamide	79196	P116	100
Hydrochloric acid	7647010	---	5000
Hydrocyanic acid	74908	P063	10
Hydrofluoric acid	7664393	U134	100
Hydrogen chloride	7647010	---	5000
Hydrogen cyanide	74908	P063	10
Hydrogen fluoride	7664393	U134	100
Hydrogen phosphide	7803512	P096	100

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Hydrogen sulfide	7783064	U135	100
Hydrogen sulfide H <sub>2</sub> S	7783064	U135	100
Hydroperoxide, 1-methyl-1-phenylethyl-	80159	U096	10
Hydroquinone	123319		100
2-Imidazoliainethione	96457	U116	10
Indeno(1,2,3-cd)pyrene	193395	U137	100
Iodomethane	74884	U138	100
1,3-Isobenzofurandione	85449	U190	5000
Isobutyl alcohol	78831	U140	5000
Isodrin	465736	P060	1
Isophorone	78591	---	5000
Isoprene	78795	---	100
Isopropanolamine dodecylbenzenesulfonate	42504461	---	1000
Isosafrole	120581	U141	100
3(2H)-Isoxazolone, 5-(aminomethyl)-	2763964	P007	1000
Kepone	143500	U142	1
Lasiocarpine	303344	U143	10
Lead ++	7439921	---	10
Lead acetate	301042	U144	10
LEAD AND COMPOUNDS	NA	---	**
Lead arsenate	7784409 7645252 10102484	---	1
Lead, bis(acetato-O)tetrahydroxytri	1335326	U146	10
Lead chloride	7758954	---	10
Lead fluoborate	13814965	---	10
Lead fluoride	7783462		10
Lead iodide	10101630	---	10
Lead nitrate	10099748	---	10
Lead phosphate	7446277	U145	10
Lead stearate	7428480 1072351 52652592 56189094	---	10
Lead subacetate	1335326	U146	10
Lead sulfate	15739807 7446142	---	10
Lead sulfide	1314870	---	10
Lead thiocyanate	592870	---	10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Lindane	58899	U129	1
Lindane (all isomers)	58899	U129	1
Lithium chromate	14307358	---	10
Malathion	121755	---	100
Maleic acid	110167	---	5000
Maleic anhydride	108316	U147	5000
Maleic hydrazide	123331	U148	5000
Malononitrile	109773	U149	1000
Manganese, bis(dimethylcarbami- dothioate-S,S')-(Manganese dimethyldithiocarbamate)	5339363	P196	## 1
Manganese Compounds	NA		**
MDI	101688		5000
MEK	78933	U159	5000
Melphalan	148823	U150	1
Mercaptodimethur	2032657	---	10
Mercuric cyanide	592041	---	1
Mercuric nitrate	10045940	---	10
Mercuric sulfate	7783359	---	10
Mercuric thiocyanate	592858	---	10
Mercurous nitrate	10415755 7782867	---	10
Mercury	7439978	U151	1
MERCURY AND COMPOUNDS	NA	---	**
Mercury (acetate-O)phenyl-	62384	P092	100
Mercury fulminate	628864	P065	10
Methacrylonitrile	126987	U152	1000
Methanamine, N-methyl-	124403	U092	1000
Methanamine, N-methyl-N-nitroso-	62759	P082	10
Methane, bromo-	74839	U029	1000
Methane, chloro-	74873	U045	100
Methane, chloromethoxy-	107302	U046	10
Methane, dibromo-	74953	U068	1000
Methane, dichloro-	75092	U080	1000
Methane, dichlorodifluoro-	75718	U075	5000
Methane, iodo-	74884	U138	100
Methane, isocyanato-	624839	P064	10
Methane, oxybis(chloro-	542881	P016	10
Methanesulfonyl chloride, trichloro-	594423	P118	100
Methanesulfonic acid, ethyl ester	62500	U119	1

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Methane, tetrachloro-	56235	U211	10
Methane, tetranitro-	509148	P112	10
Methane, tribromo-	75252	U225	100
Methane, trichloro-	67663	U044	10
Methane, trichlorofluoro-	75694	U121	5000
Methanethiol	74931	U153	100
Methanimidamide,N,N-dimethyl-N'- [3- [[ (methylamino)carbonyl]oxylphenyl]-, monohydrochloride (Formetanate- hydrochloride)	23422539	P198	## 1
Methanimidamide,N,N-dimethyl-N'-[2-methyl- 4-[[ (methylamino)carbonyl]oxylphenyl]- (Formparanate)	17702577	P197	## 1
6,9-Methano-2,4,3-benzodioxathiepin, 6,7, 8,9,10,10-hexa-chloro-1,5,5a,6,9, 9a-hexahydro-, 3-oxide	115297	P050	1
1,3,4-Metheno-2H-cyclobuta [cd]pentalen-2- one,1,1a,3,3a, 4,5,5a,5b,6- decachlorooctahydro-	143500	U142	1
4,7-Methano-1H-indene, 1,4,5,6,7,8,8 heptachloro-3a,4,7,7a-tetrahydro-	76448	P059	1
4,7-Methano-1H-indene,1,2,4, 5,6,7,8,8 octachloro-2,3,3a,4,7,7a-hexahydro-	57749	U036	1
Methanol	67561	U154	5000
Methapyrilene	91805	U155	5000
Methomyl	16752775	P066	100
Methoxychlor	72435	U247	1
Methyl alcohol	67561	U154	5000
2-Methyl aziridine	75558	P067	1
Methyl bromide	74839	U029	1000
1-Methylbutadiene	504609	U186	100
Methyl chloride	74873	U045	100
Methyl chlorocarbonate	79221	U156	1000
Methyl chloroform	71556	U226	1000
Methyl chloroformate	79221	U156	1000
3-Methylcholanthrene	56495	U157	10
4,4'-Methylenebis(2-chloroaniline)	101144	U158	10
Methylene bromide	74953	U068	1000
Methylene chloride	75092	U080	1000
4,4'-Methylenedianilin	101779		10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Methylene diphenyl di-isocyanate	101688		5000
Methyl ethyl ketone (MEK)	78933	U159	5000
Methyl ethyl ketone peroxide	1338234	U160	10
Methyl hydrazine	60344	P068	10
Methyl iodide	74884	U138	100
Methyl isobutyl ketone	108101	U161	5000
Methyl isocyanate	624839	P064	10
2-Methyl lactonitrile	75865	P069	10
Methylmercaptan	74931	U153	100
Methyl methacrylate	80626	U162	1000
Methyl parathion	298000	P071	100
4-Methyl-2-pentanone	108101	U161	5000
Methyl tert-butyl ether	1634044		1000
Methylthiouracil	56042	U164	10
Mevinphos	7786347	---	10
Mexacarbate	315184	---	1000
Mitomycin C	50077	U010	10
MNNG	70257	U163	10
Monoethylamine	75047	---	100
Monomethylamine	74895	---	100
Multi Source Leachate	---	F039	1
Muscimol	2763964	P007	1000
Naled	300765	---	10
5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-tri-deoxy-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-	20830813	U059	10
1-Naphthalenamine	134327	U167	100
2-Naphthalenamine	91598	U168	10
Naphthalenamine, N,N'-bis(2-chloroethyl)-	494031	U026	100
Naphthalene	91203	U165	100
Naphthalene, 2-chloro-	91587	U047	5000
1,4-Naphthalenedione	130154	U166	5000
2,7-Naphthalenedisulfonic acid, 3,3'[(3,3'-dimethyl-(1,1'-biphenyl)-4,4'-dryl)-bis(azo)]bis(5-amino-4-hydroxy)-tetrasodium salt	72571	U236	10
Naphthenic acid	1338245	---	100
1,4-Naphthoquinone	130154	U166	5000

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
alpha-Naphthylamine	134327	U167	100
beta-Naphthylamine	91598	U168	10
alpha-Naphthylthiourea	86884	P072	100
Nickel ++	7440020	---	100
Nickel ammonium sulfate	15699180	---	100
NICKEL AND COMPOUNDS	NA	---	**
Nickel carbonyl	13463393	P073	10
Nickel carbonyl Ni(CO) <sub>4</sub> , (T-4)-	13463393	P073	10
Nickel chloride	7718549 37211055	---	100
Nickel cyanide	557197	P074	10
Nickel cyanide Ni(CN) <sub>2</sub>	557197	P074	10
Nickel hydroxide	12054487	---	10
Nickel nitrate	14216752	---	100
Nickel sulfate	7786814	---	100
Nicotine and salts	54115	P075	100
Nitric acid	7697372	---	1000
Nitric acid, thallium(1+) salt	10102451	U217	100
Nitric oxide	10102439	P076	10
p-Nitroaniline	100016	P077	5000
Nitrobenzene	98953	U169	1000
4-Nitrobiphenyl	92933		10
Nitrogen dioxide	10102440 10544726	P078 ---	10
Nitrogen oxide NO	10102439	P076	10
Nitrogen oxide NO <sub>2</sub>	10102440 10544726	P078 ---	10
Nitroglycenne	55630	P081	10
Nitrophenol (mixed)	25154556	---	100
m-Nitrophenol	554847	---	100
o-Nitrophenol	88755	---	
p-Nitrophenol	100027	---	
o-Nitrophenol	88755	---	100
p-Nitrophenol	100027	U170	100
2-Nitrophenol	88755	---	100
4-Nitrophenol	100027	U170	100
NITROPHENOLS	NA	---	**
2-Nitropropane	79469	U171	10
NITROSAMINES	NA	---	**



<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
N-Nitrosodi-n-butylamine	924163	U172	10
N-Nitrosodiethanolamine	1116547	U173	1
N-Nitrosodiethylamine	55185	U174	1
N-Nitrosodimethylamine	62759	P082	10
N-Nitrosodiphenylamine	86306	---	100
N-Nitroso-N-ethylurea	759739	U176	1
N-Nitroso-N-methylurea	684935	U177	1
N-Nitroso-N-methylurethane	615532	U178	1
N-Nitrosomethylvinylamine	4549400	P084	10
N-Nitrosomorpholine	59892		1
N-Nitrosopiperidine	100754	U179	10
N-Nitrosopyrrolidine	930552	U180	1
Nitrotoluene	1321126	---	1000
m-Nitrotoluene	99081	---	
o-Nitrotoluene	88722	---	
p-Nitrotoluene	99990	---	
5-Nitro-o-toluidine	99558	U181	100
Octamethylpyrophosphoramidate	152169	P085	100
Osmium oxide OsO <sub>4</sub> (T-4)-	20816120	P087	1000
Osmium tetroxide	20816120	P087	1000
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	145733	P088	1000
1,2-Oxathiolane, 2,2-dioxide	1120714	U193	10
2H-1,3,2-Oxazaphosphorin-2-amine, N,N bis(2-chloroethyl)tetrahydro-, 2-oxide	50180	U058	10
Oxirane	75218	U115	10
Oxiranecarboxyaldehyde	765344	U126	10
Oxirane, (chloromethyl)-	106898	U041	100
Paraformaldehyde	30525894	---	1000
Paraldehyde	123637	U182	1000
Parathion	56382	P089	10
PCBs	1336363		1
Aroclor 1016	12674112		1
Aroclor 1221	11104282		1
Aroclor 1232	11141165		1
Aroclor 1242	53469219		1
Aroclor 1248	12672296		1
Aroclor 1254	11097691		1
Aroclor 1260	11096825		1

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
PCNB	82688	U185	100
Pentachlorobenzene	608935	U183	10
Pentachloroethane	76017	U184	10
Pentachloronitrobenzene (PCNB)	82688	U185	100
Pentachlorophenol	87865	U242	10
1,3-Pentadiene	504609	U186	100
Perachloroethylene	127184	U210	100
Phenacetin	62442	U187	100
Phenanthrene	85018	---	5000
Phenol	108952	U188	1000
Phenol, 2-chloro-	95578	U048	100
Phenol, 4-chloro-3-methyl-	59507	U039	5000
Phenol, 2-cyclohexyl-4,6-dinitro-	131895	P034	100
Phenol, 2,4-dichloro-	120832	U081	100
Phenol, 2,6-dichloro-	87650	U082	100
Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)	56531	U089	1
Phenol, 2,4-dimethyl-	105679	U101	100
Phenol, 2,4-dinitro-	51285	P048	10
Phenol, methyl-	1319773	U052	1000
m-Cresol	108394	---	
o-Cresol	95487	---	
p-Cresol	106445	---	
Phenol, 2-methyl-4,6-dinitro-	534521	P047	10
Phenol, 2,2'-methylenebis[3,4,6-trichloro-	70304	U132	100
Phenol,3-(1-methylethyl)-,methylcarbamate (m-Cumenyl methylcarbamate)	64006	P202	## 1
Phenol,3-methyl-5-(1-methyl-ethyl), methylcarbamate Promecarb)	2631370	P201	## 1
Phenol, 2-(1-methylpropyl)-4,6-dinitro	88857	P020	1000
Phenol, 4-nitro-	100027	U170	100
Phenol, pentachloro-	87865	U242	10
Phenol, 2,3,4,6-tetrachloro-	58902	U212	10
Phenol, 2,4,5-trichloro-	95954	U230	10
Phenol, 2,4,6-trichloro-	88062	U231	10
Phenol, 2,4,6-trinitro-, ammonium salt	131748	P009	10
L-Phenylalanine, 4-[bis(2-chloroethyl)aminol]	148823	U150	1
1,10-(1,2-Phenylene)pyrene	193395	U137	100
p-Phenylenediamine	106503		5000

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Phenylmercury acetate	62384	P092	100
Phenylthiourea	103855	P093	100
Phorate	298022	P094	10
Phosgene	75445	P095	10
Phosphine	7803512	---	100
Phosphoric acid	7664382	---	5000
Phosphoric acid, diethyl 4-nitrophenyl ester	311455	P041	100
Phosphoric acid, lead(2+) salt (2:3)	7446277	U145	10
Phosphorodithioic acid, O,O-diethyl S-[2(ethylthio) ethyl]ester	298044	P039	1
Phosphorodithioic acid, O,O-diethyl S-(ethylthio), methyl ester	298022	P094	10
Phosphorodithioic acid, O,O-diethyl S-methyl ester	3288582	U087	5000
Phosphorodithioic acid, O,O-dimethyl S-[2(methyl-amino)-2-oxoethyl] ester	60515	P044	10
Phosphorofluondic acid, bis(1-methylethyl) ester	55914	P043	100
Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	56382	P089	10
Phosphorothioic acid, O,[4-[(dime-thylamino) sulfonyl] phenyl]O,O-dimethyl ester	52857	P097	1000
Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	298000	P071	100
Phosphorothioic acid,O,O-diethyl O-pyrazinyl ester	297972	P040	100
Phosphorus	7723140	---	1
Phosphorus oxychloride	10025873	---	1000
Phosphorus pentasulfide	1314803	U189	100
Phosphorus sulfide	1314803	U189	100
Phosphorus trichloride	7719122	---	1000
PHTHALATE ESTERS	NA	---	**
Phthalic anhydride	85449	U190	5000
2-Picoline	109068	U191	5000
Piperidine, 1-nitroso-	100754	U179	10
Plumbane, tetraethyl-	78002	P110	10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
POLYCHLORINATED BIPHENYLS (PCBs)	1336363	---	1
Aroclor 1016	12674112	---	
Aroclor 1221	11104282	---	
Aroclor 1232	11141165	---	
Aroclor 1242	53469219	---	
Aroclor 1248	12672296	---	
Aroclor 1254	11097691	---	
Aroclor 1260	11096825	---	
Polycyclic Organic Matter <sup>e</sup>	NA		**
POLYNUCLEAR AROMATIC HYDROCARBONS	NA	---	**
Potassium arsenate	7784410	---	1
Potassium arsenite	10124502	---	1
Potassium bichromate	7778509	---	10
Potassium chromate	7789006	---	10
Potassium cyanide	151508	P098	10
Potassium cyanide KCN	151508	P098	10
Potassium hydroxide	1310583	---	1000
Potassium permanganate	7722647	---	100
Potassium silver cyanide	506516	P099	1
Pronamide	23950585	U192	5000
Propanal, 2-methyl-2-(methylsulfonyl)-, O-[(methylamino)carbonyl] oxime (Aldicarb sulfone)	1646884	P203	## 1
Propanal, 2-methyl-2-(methylthio)- O-[(methylamino)carbonyl]oxime	116063	P070	1
1-Propanamine	107108	U194	5000
1-Propanamine, N-propyl-	142847	U110	5000
1-Propanamine, N-nitroso-N-propyl-	621647	U111	10
Propane, 1,2-dibromo-3-chloro	96128	U066	1
Propane, 2-nitro-	79469	U171	10
1,3-Propane sultone	1120714	U193	10
Propane 1,2-dichloro-	78875	U083	1000
Propanedinitrile	109773	U149	1000
Propanenitrile	107120	P101	10
Propanenitrile, 3-chloro-	542767	P027	1000
Propanenitrile, 2-hydroxy-2-methyl-	75865	P069	10
Propane, 2,2'-oxybis[2-chloro-	108601	U027	1000
1,2,3-Propanetriol, trinitrate-	55630	P081	10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
1-Propanol, 2,3-dibromo-, phosphate (3:1)	126727	U235	10
1-Propanol, 2-methyl-	78831	U140	5000
2-Propanone	67641	U002	5000
2-Propanone, 1-bromo-	598312	P017	1000
Propargite	2312358	---	10
Propargyl alcohol	107197	P102	1000
2-Propenal	107028	P003	1
2-Propenamide	79061	U007	5000
1-Propene, 1,1,2,3,3,3-hexachloro-	1888717	U243	1000
1-Propene, 1,3-dichloro-	542756	U084	100
2-Propenenitrile	107131	U009	100
2-Propenenitrile, 2-methyl-	126987	U152	1000
2-Propenoic acid	79107	U008	5000
2-Prepenoic acid, ethyl ester	140885	U113	1000
2-Prepenoic acid, 2-methyl-, ethyl ester	97632	U118	1000
2-Prepenoic acid, 2-methyl-, methyl ester	80626	U162	1000
2-Propen-1-ol	107186	P005	100
beta-Propiolactone	57578		10
Propionaldehyde	123386		1000
Propionic acid	79094	---	5000
Propionic acid, 2-(2,4,5-trichlorophenoxy)-	93721	U233	100
Propionic anhydride	123626	---	5000
Propoxur (Baygon)	114261		100
n-Propylamine	107108	U194	5000
Propylene dichloride	78875	U083	1000
Propylene oxide	75569	---	100
1,2-Propylenimine	75558	P067	1
2-Propyn-1-ol	107197	P102	1000
Pyrene	129000	---	5000
Pyrethrins	121299 121211 8003347	---	1
3,6-Pyridazinedione, 1,2-dihydro-	123331	U148	5000
4-Pyridinamine	504245	P008	1000
Pyridine	110861	U196	1000
Pyridine, 2-methyl-	109068	U191	5000
Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)	54115	P075	100
2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-	66751	U237	10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	56042	U164	10
Pyrrolidine, 1-nitroso-	930552	U180	1
Pyrrolo[2,3-b]indol-5-ol,1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-,methyl-carbamate (ester),(3aS-cis)-(Physostigmine)	57476	P204	## 1
Quinoline	91225	---	5000
Quinone	106514	U197	10
Quintobenzene	82688	U185	100
RADIONUCLIDES (including radon)	NA	---	§
Reserpine	50555	U200	5000
Resorcinol	108463	U201	5000
Saccharin and salts	81072	U202	100
Safrol	94597	U203	100
Selenious acid	7783008	U204	10
Selenious acid, dithallium (1+) salt	12039520	P114	1000
Selenium ++	7782492	---	100
SELENIUM AND COMPOUNDS	NA	---	**
Selenium dioxide	7446084	U204	10
Selenium oxide	7446084	U204	10
Selenium sulfide	7488564	U205	10
Selenium sulfide SeS <sub>2</sub>	7488564	U205	10
Selenourea	630104	P103	1000
L-Senne, diazoacetate (ester)	115026	U015	1
Silver ++	7440224	---	1000
SILVER AND COMPOUNDS	NA	---	**
Silver cyanide	506649	P104	1
Silver cyanide AgCN	506649	P104	1
Silver nitrate	7761888	---	1
Silvex (2,4,5-TP)	93721	U233	100
Sodium	7440235	---	10
Sodium arsenate	7631892	---	1
Sodium arsenite	7784465	---	1
Sodium azide	26628228	P105	1000
Sodium bichromate	10588019	---	10
Sodium bifluoride	1333831	---	100
Sodium bisulfite	7631905	---	5000
Sodium chromate	7775113	---	10
Sodium cyanide	143339	P106	10

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Sodium cyanide NaCN	143339	P106	10
Sodium dodecylbenzenesulfonate	25155300	---	1000
Sodium fluoride	7681494	---	1000
Sodium hydrosulfide	16721805	---	5000
Sodium hydroxide	1310732	---	1000
Sodium hypochlorite	7681529 10022705	---	100
Sodium methylate	124414	---	1000
Sodium nitrite	7632000	---	100
Sodium phosphate, dibasic	7558794 10039324 10140655	---	5000
Sodium phosphate, tribasic	7601549 7758294 7785844 10101890 10124568 10361894	---	5000
Sodium selenite	10102188 7782823	---	100
Streptozotocin	18883664	U206	1
Strontium chromate	7789062	---	10
Strychnidin-10-one	57249	P108	10
Strychnidin-10-one, 2,3-dimethoxy-	357573	P018	100
Strychnine, including salts	57249	P108	10
Styrene	100425	---	1000
Styrene oxide	96093	---	100
Sulfur monochloride	12771083	---	1000
Sulfur phosphide	1314803	U189	100
Sulfuric acid	7664939 8014957	---	1000
Sulfuric acid, dithallium (1+) salt	7446186 10031591	P115 ---	100
Sulfuric acid, dimethyl ester	77781	U103	100
2,4,5-T acid	93765	U232	1000
2,4,5-T amines	2008460 1319728 3813147 6369966 6369977	---	5000

TABLE 3-6C HAZARDOUS MATERIALS*			
Hazardous Substance	CAS No.	USEPA Waste No.	Final RQ (Pounds)
2,4,5-T esters	93798 1928478 25168154 61792072	--- --- --- ---	1000
2,4,5-T salts	13560991	---	1000
2,4,5-T	93765	U232	1000
TDE	72548	U060	1
1,2,4,5-Tetrachlorobenzene	95943	U207	5000
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746016	---	1
1,1,1,2-Tetrachloroethane	630206	U208	100
1,1,2,2-Tetrachloroethane	79345	U209	100
Tetrachloroethene	127184	U210	100
Tetrachloroethylene	127184	U210	100
2,3,4,6-Tetrachlorophenol	58902	U212	10
Tetraethyl lead	78002	P110	10
Tetraethyl pyrophosphate	107493	P111	10
Tetraethyldithiopyrophosphate	3689245	P109	100
Tetrahydrofuran	109999	U213	1000
Tetranitromethane	509148	P112	10
Tetraphosphoric acid, hexaethyl ester	757584	P062	100
Thallic oxide	1314325	P113	100
Thallium ++	7440280	---	1000
Thallium and compounds	NA	---	**
Thallium (I) acetate	563688	U214	100
Thallium (I) carbonate	6533739	U215	100
Thallium (I) chloride	7791120	U216	100
Thallium chloride T1C1	7791120	U216	100
Thallium (I) nitrate	10102451	U217	100
Thallium oxide T1203	1314325	P113	100
Thallium selenite	12039520	P114	1000
Thallium (I) sulfate	7446186 10031591	P115 ---	100
Thioacetamide	62555	U218	10
Thiodiphosphoric acid, tetraethyl ester	3689245	P109	100
Thiofanox	39196184	P045	100
Thioimidodicarbonic diamide [(H <sub>2</sub> N)C(S)] <sub>2</sub> NH	541537	P049	100
Thiomethanol	74931	U153	100



<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Thioperoxydicarbonic diamide [(H <sub>2</sub> N)C(S)] 2S <sub>2</sub> , tetra-methyl-	137268	U244	10
Thiophenol	108985	P104	100
Thiosamincarbazide	79196	P116	100
Thiourea	62566	U219	10
Thiourea, (2-chlorophenyl)-	5344821	P026	100
Thiourea, 1-naphthalenyl-	86884	P072	100
Thiourea, phenyl-	103855	P093	100
Thiram	137268	U244	10
Titanium tetrachloride	7550450		1000
Toluene	108883	U220	1000
Toluenediamine	95807	U221	10
	496720	---	
	823405	---	
	25376458	---	
2,4-Toluene diamine	95807	U221	10
Toluene diisocyanate	584849	U223	100
	91087	---	
	26471625	---	
2,4- Toluene diisocyanate	91087	U223	100
o-Toluidine	95534	U328	100
p-Toluidine	106490	U353	100
o-Toluidine hydrochloride	636215	U222	100
Toxaphene	8001352	P123	1
2,4,5-TP acid	93721	U233	100
2,4,5-TP esters	32534955	---	100
1H-1,2,4-Triazol-3-amine	61825	U011	10
Trichlorton	52686	---	100
1,2,4-Trichlorobenzene	120821	---	100
1,1,1-Trichloroethane	71556	U226	1000
1,1,2-Trichloroethane	79005	U227	100
Trichloroethene	79016	U228	100
Trichloroethylene	79016	U228	100
Trichloromethanesulfonyl chloride	594423	P118	100
Trichloromonofluoromethane	75694	U121	5000

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Trichlorophenol	25167822	---	10
2,3,4-Trichlorophenol	15950660	---	
2,3,5-Trichlorophenol	933788	---	
2,3,6-Trichlorophenol	933755	---	
2,4,5-Trichlorophenol	95954	U230	10
2,4,6-Trichlorophenol	88062	U231	10
3,4,5-Trichlorophenol	609198	---	
2,4,5-Trichlorophenol	95954	U230	10
2,4,6-Trichlorophenol	88062	U231	10
Triethanolamine dodecylbenzene-sulfonate	27323417	---	1000
Triethylamine	121448	---	5000
Trifluralin	1582098		10
Trimethylamine	75503	---	100
2,2,4-Trimethylpentane	540841		1000
1,3,5-Trinitrobenzene	99354	U234	10
1,3,5-Trioxane, 2,4,6-trimethyl-	123637	U182	1000
Tris(2,3-dibromopropyl) phosphate	126727	U235	10
Trypan blue	72571	U236	10
Unlisted Hazardous Wastes Characteristic of Corrosivity	NA	D002	100
Unlisted Hazardous Wastes Characteristic of Toxicity:			
Arsenic (D004)	NA	D004	1
Barium (D005)	NA	D005	1000
Benzene (D018)	NA	D018	10
Cadmium (D006)	NA	D006	10
Carbon tetrachloride (D019)	NA	D019	10
Chlordane (D020)	NA	D020	1
Chlorobenzene (D021)	NA	D021	100
Chloroform (D022)	NA	D022	10
Chromium (D007)	NA	D007	10
o-Cresol (D023)	NA	D023	100

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
m-Cresol (D024)	NA	D024	100
p-Cresol (D025)	NA	D025	100
Cresol (D026)	NA	D026	100
2,4-D (D016)	NA	D016	100
1,4-Dichlorobenzene (D027)	NA	D027	100
1,2-Dichloroethane (D028)	NA	D028	100
1,1-Dichloroethylene (D029)	NA	D029	100
2,4-Dinitrotoluene (D030)	NA	D030	10
Endrin (D012)	NA	D012	1
Heptachlor (and epoxide) (D031)	NA	D031	1
Hexachlorobenzene (D032)	NA	D032	10
Hexachlorobutadiene (D033)	NA	D033	1
Hexachloroethane (D034)	NA	D034	100
Lead (D008)	NA	D008	10
Lindane (D013)	NA	D013	1
Mercury (D009)	NA	D009	1
Methoxychlor (D014)	NA	D014	1
Methyl ethyl ketone (D035)	NA	D035	5000
Nitrobenzene (D036)	NA	D036	1000
Pentachlorophenol (D037)	NA	D037	10
Pyridine (D038)	NA	D038	1000
Selenium (D010)	NA	D010	10
Silver (D011)	NA	D011	1
Tetrachloroethylene (D039)	NA	D039	100
Toxaphene (D015)	NA	D015	1
Trichloroethylene (D040)	NA	D040	100
2,4,5-Trichlorophenol (D041)	NA	D041	10
2,4,6-Trichlorophenol (D042)	NA	D042	10
2,4,5-TP (D017)	NA	D017	100
Vinyl chloride (D043)	NA	D043	1
Unlisted Hazardous Wastes Characteristic of Ignitability	NA	D001	100
Unlisted Hazardous Wastes Characteristic of Reactivity	NA	D003	100
Uracil mustard	66751	U237	10
Uranyl acetate	541093	---	100
Uranyl nitrate	10102064 36478769	---	100
Urea, N-ethyl-N-nitroso	759739	U176	1
Urea, N-methyl-N-nitroso	684935	U177	1
Urethane	51796	U238	100

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste No.</b>	<b>Final RQ (Pounds)</b>
Vanadic acid, ammonium salt	7803556	P119	1000
Vanadic oxide V205	1314621	P120	1000
Vanadic pentoxide	1314621	P120	1000
Vanadyl sulfate	27774136	---	1000
Vinyl chloride	75014	U043	1
Vinyl acetate	108054	---	5000
Vinyl acetate monomer	108054	---	5000
Vinyl bromide	593602		100
Vinylamine, N-methyl-N-nitroso-	4549400	P084	10
Vinylidene chloride	75354	U078	100
Warfarin, and salts, when present at concentrations greater than 0.3 percent	81812	P001	100
Xylene	1330207	U239	100
Xylene (mixed)	1330207	U239	100
m-Xylene	108383	---	1000
o-Xylene	95476	---	1000
p-Xylene	106423	---	100
Xylenes (isomers and mixtures)	1330207	---	100
Xylenol	1300716	---	1000
Yohimban-16-carboxylic acid, 11,17 dimethoxy-18-[(3,4,5-trimethoxy-benzoyl) oxy]-, methyl ester (3beta, 16beta,17alpha, 18beta,20alpha)-	50555	U200	5000
Zinc ++	7440666	---	1000
ZINC AND COMPOUNDS	NA	---	**
Zinc acetate	557346	---	1000
Zinc ammonium chloride	52628258 14639975 14639986	--- --- ---	1000
Zinc,bis(dimethylcarbomodithioato-S,S')-, (Ziram)	137304	P205	## 1
Zinc borate	1332076	---	1000
Zinc bromide	7699458	---	1000
Zinc carbonate	3486359	---	1000
Zinc chloride	7646857	---	1000

**TABLE 3-6C  
HAZARDOUS MATERIALS\***

<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste Number</b>	<b>Final RQ (Pounds)</b>
Zinc cyanide	557211	P121	10
Zinc cyanide Zn(CN) <sub>2</sub>	557211	P121	10
Zinc fluoride	7783495	---	1000
Zinc formate	557415	---	1000
Zinc hydrosulfite	7779864	---	1000
Zinc nitrate	7779886	---	1000
Zinc phenosulfonate	127822	---	5000
Zinc phosphide	1314847	P122	100
Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations greater than 10 percent	1314847	P122	100
Zinc silicofluoride	16871719	---	5000
Zinc sulfate	7733020	---	1000
Zirconium nitrate	13746899	---	5000
Zirconium potassium fluoride	16923958	---	1000
Zirconium sulfate	14644612	---	5000
Zirconium tetrachloride	10026116	---	5000
F001	---	F001	10
The following spent halogenated solvents used in degreasing: all spent solvent mixtures and blends used in degreasing containers, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures:			
(a) Tetrachloroethylene	127184	U210	100
(b) Trichloroethylene	79016	U228	100
(c) Methylene chloride	75092	U080	1000
(d) 1,1,1-Trichloroethane	71556	U226	1000
(e) Carbon tetrachloride	56235	U211	10
(f) Chlorinated fluorocarbons	NA	---	5000
F002		F002	10
The following spent halogenated solvents: all spent solvent mixtures and blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures:			

**TABLE 3-6C**  
**HAZARDOUS MATERIALS\***

<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste Number</b>	<b>Final RQ (Pounds)</b>
(a) Tetrachloroethylene	127184	U210	100
(b) Methylene chloride	75092	U080	1000
(c) Trichloroethylene	79016	U228	100
(d) 1,1,1-Trichloroethane	71556	U226	1000
(e) Chlorobenzene	108907	U037	100
(f) 1,1,2-Trichloro-1,2,2-trifluoroethane	76131	---	5000
(g) o-Dichlorobenzene	95501	U070	100
(h) Trichlorofluoromethane	75694	U121	5000
(i) 1,1,2-Trichloroethane	79005	U227	100
<b>F003</b>		<b>F003</b>	<b>100</b>
The following spent nonhalogenated solvents and the still bottoms from the recovery of the solvents:			
(a) Xylene	1330207	---	1000
(b) Acetone	67641	---	5000
(c) Ethyl acetate	141786	---	5000
(d) Ethylbenzene	100414	---	1000
(e) Ethyl ether	60297	---	100
(f) Methyl isobutyl ketone	108101	---	5000
(g) n-Butyl alcohol	71363	---	5000
(h) Cyclohexanone	108941	---	5000
(i) Methanol	67561	---	5000
<b>F004</b>		<b>F004</b>	<b>100</b>
The following spent nonhalogenated solvents and the still bottoms from the recovery of the solvents:			
(a) Cresols and cresylic acid	131773	U052	100
(b) Nitrobenzene	98953	U169	1000
<b>F005</b>		<b>F005</b>	<b>100</b>
The following spent nonhalogenated solvents and the still bottoms from the recovery of the solvents:			
(a) Toluene	108883	U220	1000
(b) Methyl ethyl ketone	78933	U159	5000
(c) Carbon disulfide	75150	P022	100
(d) Isobutanol	78831	U140	5000
(e) Pyndine	110861	U196	1000

<b>TABLE 3-6C</b> <b>HAZARDOUS MATERIALS*</b>			
<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste Number</b>	<b>Final RQ (Pounds)</b>
F006		F006	10
Wastewater treatment sludge from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum, (2) tin plating on carbon steel, (3) zinc plating (segregated basis) on carbon steel, (4) aluminum or zinc-aluminum plating on carbon steel, (5) cleaning and stripping associated with tin, zinc, and aluminum plating on carbon steel, and (6) chemical etching and milling of aluminum.			
F007		F007	10
Spent cyanide-plating bath solutions from electroplating operations.			
F008		F008	10
Plating-bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.			
F009		F009	10
Spent stripping- and cleaning-bath solutions from electroplating operations where cyanides are used in the process.			
F010		F010	10
Quenching-bath residues from oil baths from metal heat-treating operations where cyanides are used in the process.			
F011		F011	10
Spent cyanide solution from salt-bath pot cleaning from metal heat-treating operations.			
F012		F012	10
Quenching-wastewater-treatment sludge from metal heat-treating operations where cyanides are used in the process.			
F019		F019	10
Wastewater-treatment sludge from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive coating process.			
F020		F020	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of manufacturing use (as a reactant, chemical intermediate, or a component in a formulating process) of trichlorophenol or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This list does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.)			

**TABLE 3-6C  
HAZARDOUS MATERIALS\***

<b>Hazardous Substance</b>	<b>CAS No.</b>	<b>USEPA Waste Number</b>	<b>Final RQ (Pounds)</b>
F021		F021	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, a chemical intermediate, or a component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.			
F022		F022	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, a chemical intermediate, or a component in a formulating process) of tetra-, penta, or hexachlorobenzenes under alkaline conditions.			
F023		F023	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, a chemical intermediate, or a component in a formulating process) of tri- and tetrachlorophenols. (This list does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified, 2,4,5-tri-chlorophenol.)			
F024		F024	1
Wastes, including, but not limited to, distillation residues, heavy ends, tars, and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free-radical catalyzed processes. (This list does not include light ends, spent filters and filter aids, spent dessicants(sic), wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in 261.32.)			
F025		F025	##1
Condensed light ends, spent filters, and filter aids and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons by free-radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon-chain lengths ranging from one through including five, with varying amounts and positions of chlorine substitution.			
F026		F026	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, a chemical intermediate, or a component in a formulating process) of tetrapenta-, or hexachlorobenzene under alkaline conditions.			



TABLE 3-6C HAZARDOUS MATERIALS*			
Hazardous Substance	CAS No.	USEPA Waste Number	Final RQ (Pounds)
F027		F027	1
Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This list does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-tri-chlorophenol as the sole component.)			
F028		F028	1
Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.			
F039		F039	1
Leachate resulting from the treatment, storage, or disposal of wastes classified by more than one waste code under subpart D or from a mixture of wastes classified under subparts C and D of this part.			

+ Indicates the statutory source as defined by 1, 2, 3, and 4 below.

++ No reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

+++ The RQ for asbestos is limited to friable forms.

(1) Indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 311 (b)(4).

(2) Indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 307(a).

(3) Indicates that the statutory source for designation of this hazardous substance under CERCLA is CAA Section 112.

(4) Indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001.

# Indicates that the RQ is subject to change when the assessment of potential carcinogenicity is completed.

## The statutory RQ is shown as the final RQ.

§ The adjusted RQs for radionuclides may be found in Appendix A to Table 3-6C.

\* The hazardous substances listed in this table are subject to the exclusion limits for hazardous waste. If a contaminant is added to the U.S. regulations on which this table is based, it will be subject to the requirements of Section 2-22 for health-based standards.

\*\* Indicates that no RQ is being assigned to the generic or broad class.

(a) Benzene was already a CERCLA hazardous substance prior to the CAA Amendments of 1990 and received an adjusted 10-pound RQ based on potential carcinogenicity in an August 14, 1989, final rule (54 FR 33418). The CAA

Amendments specify that "benzene (including benzene from gasoline) is a hazardous air pollutant and, thus, a CERCLA hazardous substance.

- (b) The CAA Amendments of 1990 list DDE (3547-04-4) as a CAA hazardous air pollutant. The CAS number, 3547-04-4, is for the chemical, p,p'-dichlorodiphenylethane. DDE or p,p'-dichlorodiphenyldichloroethylene, CAS number 72-55-9, is already listed in Table 302.4 with a final RQ of 1 pound. The substance identified by the CAS number 3547-04-4 has been evaluated and listed as DDE to be consistent with the CAA section 112 listing, as amended.
- (c) Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.
- (d) Includes mono-and di-ethylene glycol, and triethylene glycol  $R-(OCH_2CH_2)_n-OR'$  where:  $n = 1, 2, \text{ or } 3$ ,  $R = \text{alkyl C7 or less}$ ; or  $R = \text{phenyl or alkyl substituted phenyl}$ ;  $R' = H \text{ or alkyl C7 or less}$ ; or  $OR'$  consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate.
- (e) Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100°C.

[CFR Parent Table 302.4 amended at 47 FR 37306, Aug. 18, 1992; 57 FR 61504, Dec. 24, 1992; 58 FR 35327, June 30, 1993; 59 FR 31552, June 20, 1994; revised at 60 FR 7848, Feb. 9, 1995; corrected at 60 FR 19165, April 17, 1995; amended at 60 FR 30938, June 12, 1995; 60 FR 35492, July 10, 1995; 60 FR 35991, July 12, 1995; 62 FR 32979, June 17, 1997; 63 FR 24627, May 4, 1998, effective Nov. 4, 1998, 63 FR 42189, Aug. 6, 1998, effective Feb. 8, 1999]

Appendix A to Table 3-6C Radionuclides		
Radionuclide	Atomic Number	Final RQ Ci (Bq)
Radionuclides@		1& (3.7E 10)
Actinium-224	89	100 (3.7E 12)
Actinium-225	89	1 (3.7E 10)
Actinium-226	89	10 (3.7E 11)
Actinium-227	89	0.001 (3.7E 7)
Actinium-228	89	10 (3.7E 11)
Aluminum-26	13	10 (3.7E 11)
Americium-237	95	1000 (3.7E 13)
Americium-238	95	100 (3.7E 12)
Americium-239	95	100 (3.7E 12)
Americium-240	95	10 (3.7E 11)
Americium-241	95	0.01 (3.7E 8)
Americium-242m	95	0.01 (3.7E 8)
Americium-242	95	100 (3.7E 12)
Americium-243	95	0.01 (3.7E 8)
Americium-244m	95	1000 (3.7E 13)
Americium-244	95	10 (3.7E 11)
Americium-245	95	1000 (3.7E 13)
Americium-246m	95	1000 (3.7E 13)
Americium-246	95	1000 (3.7E 13)
Antimony-115	51	1000 (3.7E 13)
Antimony-116m	51	100 (3.7E 12)
Antimony-116	51	1000 (3.7E 13)
Antimony-117	51	1000 (3.7E 13)
Antimony-118m	51	10 (3.7E 11)
Antimony-119	51	1000 (3.7E 13)
Antimony-120 (16 min)	51	1000 (3.7E 13)
Antimony-120 (5.76 day)	51	10 (3.7E 11)
Antimony-122	51	10 (3.7E 11)
Antimony-124m	51	1000 (3.7E 13)
Antimony-124	51	10 (3.7E 11)
Antimony-125	51	10 (3.7E 11)
Antimony-126m	51	1000 (3.7E 13)
Antimony-126	51	10 (3.7E 11)
Antimony-127	51	10 (3.7E 11)
Antimony-128 (10.4 min)	51	1000 (3.7E 13)
Antimony-128 (9.01 hr)	51	10 (3.7E 11)
Antimony-129	51	100 (3.7E 12)
Antimony-130	51	100 (3.7E 12)
Antimony-131	51	1000 (3.7E 13)
Argon-39	18	1000 (3.7E 13)

Appendix A to Table 3-6C Radionuclides		
Radionuclide	Atomic Number	Final RQ Ci (Bq)
Argon-41	18	10 (3.7E 11)
Arsenic-69	33	1000 (3.7E 13)
Arsenic-70	33	100 (3.7E 12)
Arsenic-71	33	100 (3.7E 12)
Arsenic-72	33	10 (3.7E 11)
Arsenic-73	33	100 (3.7E 12)
Arsenic-74	33	10 (3.7E 11)
Arsenic-76	33	100 (3.7E 12)
Arsenic-77	33	1000 (3.7E 13)
Arsenic-78	33	100 (3.7E 12)
Astatine-207	85	100 (3.7E 12)
Astatine-211	85	100 (3.7E 12)
Barium-126	56	1000 (3.7E 13)
Barium-128	56	10 (3.7E 11)
Barium-131m	56	1000 (3.7E 13)
Barium-131	56	10 (3.7E 11)
Barium-133m	56	100 (3.7E 12)
Barium-133	56	10 (3.7E 11)
Barium-135m	56	1000 (3.7E 13)
Barium-139	56	1000 (3.7E 13)
Barium-140	56	10 (3.7E 11)
Barium-141	56	1000 (3.7E 13)
Barium-142	56	1000 (3.7E 13)
Berkelium-245	97	100 (3.7E 12)
Berkelium-246	97	10 (3.7E 11)
Berkelium-247	97	0.01 (3.7E 8)
Berkelium-249	97	1 (3.7E 10)
Berkelium-250	97	100 (3.7E 12)
Beryllium-7	4	100 (3.7E 12)
Beryllium-10	4	1 (3.7E 10)
Bismuth-200	83	100 (3.7E 12)
Bismuth-201	83	100 (3.7E 12)
Bismuth-202	83	1000 (3.7E 13)
Bismuth-203	83	10 (3.7E 11)
Bismuth-205	83	10 (3.7E 11)
Bismuth-206	83	10 (3.7E 11)
Bismuth-207	83	10 (3.7E 11)
Bismuth-210m	83	0.1 (3.7E 9)
Bismuth-210	83	10 (3.7E 11)
Bismuth-212	83	100 (3.7E 12)
Bismuth-213	83	100 (3.7E 12)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Bismuth-214	83	100 (3.7E 12)
Bromine-74m	35	100 (3.7E 12)
Bromine-74	35	100 (3.7E 12)
Bromine-75	35	100 (3.7E 12)
Bromine-76	35	10 (3.7E 11)
Bromine-77	35	100 (3.7E 12)
Bromine-80m	35	1000 (3.7E 13)
Bromine-80	35	1000 (3.7E 13)
Bromine-82	35	10 (3.7E 11)
Bromine-83	35	1000 (3.7E 13)
Bromine-84	35	100 (3.7E 12)
Cadmium-104	48	1000 (3.7E 13)
Cadmium-107	48	1000 (3.7E 13)
Cadmium-109	48	1 (3.7E 10)
Cadmium-113m	48	0.1 (3.7E 9)
Cadmium-113	48	0.1 (3.7E 9)
Cadmium-115m	48	10 (3.7E 11)
Cadmium-115	48	100 (3.7E 12)
Cadmium-117m	48	10 (3.7E 11)
Cadmium-117	48	100 (3.7E 12)
Calcium-41	20	10 (3.7E 11)
Calcium-45	20	10 (3.7E 11)
Calcium-47	20	10 (3.7E 11)
Californium-244	98	1000 (3.7E 13)
Californium-246	98	10 (3.7E 11)
Californium-248	98	0.1 (3.7E 9)
Californium-249	98	0.01 (3.7E 8)
Californium-250	98	0.01 (3.7E 8)
Californium-251	98	0.01 (3.7E 8)
Californium-252	98	0.1 (3.7E 9)
Californium-253	98	10 (3.7E 11)
Californium-254	98	0.1 (3.7E 9)
Carbon-11	6	1000 (3.7E 13)
Carbon-14	6	10 (3.7E 11)
Cerium-134	58	10 (3.7E 11)
Cerium-135	58	10 (3.7E 11)
Cerium-137m	58	100 (3.7E 12)
Cerium-137	58	1000 (3.7E 13)
Cerium-139	58	100 (3.7E 12)
Cerium-141	58	10 (3.7E 11)
Cerium-143	58	100 (3.7E 12)

Appendix A to Table 3-6C Radionuclides		
Radionuclide	Atomic Number	Final RQ Ci (Bq)
Cerium-144	58	1 (3.7E 10)
Cesium-125	55	1000 (3.7E 13)
Cesium-127	55	100 (3.7E 12)
Cesium-129	55	100 (3.7E 12)
Cesium-130	55	1000 (3.7E 13)
Cesium-131	55	1000 (3.7E 13)
Cesium-132	55	10 (3.7E 11)
Cesium-134m	55	1000 (3.7E 13)
Cesium-134	55	1 (3.7E 10)
Cesium-135m	55	100 (3.7E 12)
Cesium-135	55	10 (3.7E 11)
Cesium-136	55	10 (3.7E 11)
Cesium-137	55	1 (3.7E 10)
Cesium-138	55	100 (3.7E 12)
Chlorine-36	17	10 (3.7E 11)
Chlorine-38	17	100 (3.7E 12)
Chlorine-39	17	100 (3.7E 12)
Chromium-48	24	100 (3.7E 12)
Chromium-49	24	1000 (3.7E 13)
Chromium-51	24	1000 (3.7E 13)
Cobalt-55	27	10 (3.7E 11)
Cobalt-56	27	10 (3.7E 11)
Cobalt-57	27	100 (3.7E 12)
Cobalt-58m	27	1000 (3.7E 13)
Cobalt-58	27	10 (3.7E 11)
Cobalt-60m	27	1000 (3.7E 13)
Cobalt-60	27	10 (3.7E 11)
Cobalt-61	27	1000 (3.7E 13)
Cobalt-62m	27	1000 (3.7E 13)
Copper-60	29	100 (3.7E 12)
Copper-61	29	100 (3.7E 12)
Copper-64	29	1000 (3.7E 13)
Copper-67	29	100 (3.7E 12)
Curium-238	96	1000 (3.7E 13)
Curium-240	96	1 (3.7E 10)
Curium-241	96	10 (3.7E 11)
Curium-242	96	1 (3.7E 10)
Curium-243	96	0.01 (3.7E 8)
Curium-244	96	0.01 (3.7E 8)
Curium-245	96	0.01 (3.7E 8)
Curium-246	96	0.01 (3.7E 8)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Curium-247	96	0.01 (3.7E 8)
Curium-248	96	0.001 (3.7E 7)
Curium-249	96	1000 (3.7E 13)
Dysprosium-155	66	100 (3.7E 12)
Dysprosium-157	66	100 (3.7E 12)
Dysprosium-159	66	100 (3.7E 12)
Dysprosium-165	66	1000 (3.7E 13)
Dysprosium-166	66	10 (3.7E 11)
Einsteinium-250	99	10 (3.7E 11)
Einsteinium-251	99	1000 (3.7E 13)
Einsteinium-253	99	10 (3.7E 11)
Einsteinium-254m	99	1 (3.7E 10)
Einsteinium-254	99	0.1 (3.7E 9)
Erbium-161	68	100 (3.7E 12)
Erbium-165	68	1000 (3.7E 13)
Erbium-169	68	100 (3.7E 12)
Erbium-171	68	100 (3.7E 12)
Erbium-172	68	10 (3.7E 11)
Europium-145	63	10 (3.7E 11)
Europium-146	63	10 (3.7E 11)
Europium-147	63	10 (3.7E 11)
Europium-148	63	10 (3.7E 11)
Europium-149	63	100 (3.7E 12)
Europium-150 (12.6 hr)	63	1000 (3.7E 13)
Europium-150 (34.2 yr)	63	10 (3.7E 11)
Europium-152m	63	100 (3.7E 12)
Europium-152	63	10 (3.7E 11)
Europium-154	63	10 (3.7E 11)
Europium-155	63	10 (3.7E 11)
Europium-156	63	10 (3.7E 11)
Europium-157	63	10 (3.7E 11)
Europium-158	63	1000 (3.7E 13)
Fermium-252	100	10 (3.7E 11)
Fermium-253	100	10 (3.7E 11)
Fermium-254	100	100 (3.7E 12)
Fermium-255	100	100 (3.7E 12)
Fermium-257	100	1 (3.7E 10)
Fluorine-18	9	1000 (3.7E 13)
Francium-222	87	100 (3.7E 12)
Francium-223	87	100 (3.7E 12)
Gadolinium-145	64	100 (3.7E 12)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Gadolinium-146	64	10 (3.7E 11)
Gadolinium-147	64	10 (3.7E 11)
Gadolinium-148	64	0.001 (3.7E7)
Gadolinium-149	64	100 (3.7E 12)
Gadolinium-151	64	100 (3.7E 12)
Gadolinium-152	64	0.001 (3.7E 7)
Gadolinium-153	64	10 (3.7E 11)
Gadolinium-159	64	1000 (3.7E 13)
Gallium-65	31	1000 (3.7E 13)
Gallium-66	31	10 (3.7E 11)
Gallium-67	31	100 (3.7E 12)
Gallium-68	31	1000 (3.7E 13)
Gallium-70	31	1000 (3.7E 13)
Gallium-72	31	10 (3.7E 11)
Gallium-73	31	100 (3.7E 12)
Germanium-66	32	100 (3.7E 12)
Germanium-67	32	1000 (3.7E 13)
Germanium-68	32	10 (3.7E 11)
Germanium-69	32	10 (3.7E 11)
Germanium-71	32	1000 (3.7E 13)
Germanium-75	32	1000 (3.7E 13)
Germanium-77	32	10 (3.7E 11)
Germanium-78	32	1000 (3.7E 13)
Gold-193	79	100 (3.7E 12)
Gold-194	79	10 (3.7E 11)
Gold-195	79	100 (3.7E 12)
Gold-198m	79	10 (3.7E 11)
Gold-198	79	100 (3.7E 12)
Gold-199	79	100 (3.7E 12)
Gold-200m	79	10 (3.7E 11)
Gold-200	79	1000 (3.7E 13)
Gold-201	79	1000 (3.7E 13)
Hafnium-170	72	100 (3.7E 12)
Hafnium-172	72	1 (3.7E 10)
Hafnium-173	72	100 (3.7E 12)
Hafnium-175	72	100 (3.7E 12)
Hafnium-177m	72	1000 (3.7E 13)
Hafnium-178m	72	0.1 (3.7E 9)
Hafnium-179m	72	100 (3.7E 12)
Hafnium-180m	72	100 (3.7E 12)
Hafnium-181	72	10 (3.7E 11)



<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Hafnium-182m	72	100 (3.7E 12)
Hafnium-182	72	0.1 (3.7E 9)
Hafnium-183	72	100 (3.7E 12)
Hafnium-184	72	100 (3.7E 12)
Holmium-155	67	1000 (3.7E 13)
Holmium-157	67	1000 (3.7E 13)
Holmium-159	67	1000 (3.7E 13)
Holmium-161	67	1000 (3.7E 13)
Holmium-162m	67	1000 (3.7E 13)
Holmium-162	67	1000 (3.7E 13)
Holmium-164m	67	1000 (3.7E 13)
Holmium-164	67	1000 (3.7E 13)
Holmium-166m	67	1 (3.7E 10)
Holmium-166	67	100 (3.7E 12)
Holmium-167	67	100 (3.7E 12)
Hydrogen-3	1	100 (3.7E 12)
Indium-109	49	100 (3.7E 12)
Indium-110 (69.1 min)	49	100 (3.7E 12)
Indium-110 (4.9 hr)	49	10 (3.7E 11)
Indium-111	49	100 (3.7E 12)
Indium-112	49	1000 (3.7E 13)
Indium-113m	49	1000 (3.7E 13)
Indium-114m	49	10 (3.7E 11)
Indium-115m	49	100 (3.7E 12)
Indium-115	49	0.1 (3.7E 9)
Indium-116m	49	100 (3.7E 12)
Indium-117m	49	100 (3.7E 12)
Indium-117	49	1000 (3.7E 13)
Indium-119m	49	1000 (3.7E 13)
Iodine-120m	53	100 (3.7E 12)
Iodine-120	53	10 (3.7E 11)
Iodine-121	53	100 (3.7E 12)
Iodine-123	53	10 (3.7E 11)
Iodine-124	53	0.1 (3.7E 9)
Iodine-125	53	0.01 (3.7E 8)
Iodine-126	53	0.01 (3.7E 8)
Iodine-128	53	1000 (3.7E 13)
Iodine-129	53	0.001 (3.7E 7)
Iodine-130	53	1 (3.7E 10)
Iodine-131	53	0.01 (3.7E 8)
Iodine-132m	53	10 (3.7E 11)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Iodine-132	53	10 (3.7E 11)
Iodine-133	53	0.1 (3.7E 9)
Iodine-134	53	100 (3.7E 12)
Iodine-135	53	10 (3.7E 11)
Iridium-182	77	1000 (3.7E 13)
Iridium-184	77	100 (3.7E 12)
Iridium-185	77	100 (3.7E 12)
Iridium-186	77	10 (3.7E 11)
Iridium-187	77	100 (3.7E 12)
Iridium-188	77	10 (3.7E 11)
Iridium-189	77	100 (3.7E 12)
Iridium-190m	77	1000 (3.7E 13)
Iridium-190	77	10 (3.7E 11)
Iridium-192m	77	100 (3.7E 12)
Iridium-192	77	10 (3.7E 11)
Iridium-194m	77	10 (3.7E 11)
Iridium-194	77	100 (3.7E 12)
Iridium-195m	77	100 (3.7E 12)
Iridium-195	77	1000 (3.7E 13)
Iron-52	26	100 (3.7E 12)
Iron-55	26	100 (3.7E 12)
Iron-59	26	10 (3.7E 11)
Iron-60	26	0.1 (3.7E 9)
Krypton-74	36	10 (3.7E 11)
Krypton-76	36	10 (3.7E 11)
Krypton-77	36	10 (3.7E 11)
Krypton-79	36	100 (3.7E 12)
Krypton-81	36	1000 (3.7E 13)
Krypton-83m	36	1000 (3.7E 13)
Krypton-85m	36	100 (3.7E 12)
Krypton-85	36	1000 (3.7E 13)
Krypton-87	36	10 (3.7E 11)
Krypton-88	36	10 (3.7E 11)
Lanthanum-131	57	1000 (3.7E 13)
Lanthanum-132	57	100 (3.7E 12)
Lanthanum-135	57	1000 (3.7E 13)
Lanthanum-137	57	10 (3.7E 11)
Lanthanum-138	57	1 (3.7E 10)
Lanthanum-140	57	10 (3.7E 11)
Lanthanum-141	57	1000 (3.7E 13)
Lanthanum-142	57	100 (3.7E 12)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Lanthanum-143	57	1000 (3.7E 13)
Lead-195m	82	1000 (3.7E 13)
Lead-198	82	100 (3.7E 12)
Lead-199	82	100 (3.7E 12)
Lead-200	82	100 (3.7E 12)
Lead-201	82	100 (3.7E 12)
Lead-202m	82	10 (3.7E 11)
Lead-202	82	1 (3.7E 10)
Lead-203	82	100 (3.7E 12)
Lead-205	82	100 (3.7E 12)
Lead-209	82	1000 (3.7E 13)
Lead-210	82	0.01 (3.7E 8)
Lead-211	82	100 (3.7E 12)
Lead-212	82	10 (3.7E 11)
Lead-214	82	100 (3.7E 12)
Lutetium-169	71	10 (3.7E 11)
Lutetium-170	71	10 (3.7E 11)
Lutetium-171	71	10 (3.7E 11)
Lutetium-172	71	10 (3.7E 11)
Lutetium-173	71	100 (3.7E 12)
Lutetium-174m	71	10 (3.7E 11)
Lutetium-174	71	10 (3.7E 11)
Lutetium-176m	71	1000 (3.7E 13)
Lutetium-176	71	1 (3.7E 10)
Lutetium-177m	71	10 (3.7E 11)
Lutetium-177	71	100 (3.7E 12)
Lutetium-178m	71	1000 (3.7E 13)
Lutetium-178	71	1000 (3.7E 13)
Lutetium-179	71	1000 (3.7E 13)
Magnesium-28	12	10 (3.7E 11)
Manganese-51	25	1000 (3.7E 13)
Manganese-52m	25	1000 (3.7E 13)
Manganese-52	25	10 (3.7E 11)
Manganese-53	25	1000 (3.7E 13)
Manganese-54	25	10 (3.7E 11)
Manganese-56	25	100 (3.7E 12)
Mendelevium-257	101	100 (3.7E 12)
Mendelevium-258	101	1 (3.7E 10)
Mercury-193m	80	10 (3.7E 11)
Mercury-193	80	100 (3.7E 12)
Mercury-194	80	0.1 (3.7E 9)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Mercury-195m	80	100 (3.7E 12)
Mercury-195	80	100 (3.7E 12)
Mercury-197m	80	1000 (3.7E 13)
Mercury-197	80	1000 (3.7E 13)
Mercury-199m	80	1000 (3.7E 13)
Mercury-203	80	10 (3.7E 11)
Molybdenum-90	42	100 (3.7E 12)
Molybdenum-93m	42	10 (3.7E 11)
Molybdenum-93	42	100 (3.7E 12)
Molybdenum-99	42	100 (3.7E 12)
Molybdenum-101	42	1000 (3.7E 13)
Neodymium-136	60	1000 (3.7E 13)
Neodymium-138	60	1000 (3.7E 13)
Neodymium-139m	60	100 (3.7E 12)
Neodymium-139	60	1000 (3.7E 13)
Neodymium-141	60	1000 (3.7E 13)
Neodymium-147	60	10 (3.7E 11)
Neodymium-149	60	100 (3.7E 12)
Neodymium-151	60	1000 (3.7E 13)
Neptunium-232	93	1000 (3.7E 13)
Neptunium-233	93	1000 (3.7E 13)
Neptunium-234	93	10 (3.7E 11)
Neptunium-235	93	1000 (3.7E 13)
Neptunium-236 (1.2 E 5 yr)	93	0.1 (3.7E 9)
Neptunium-236 (22.5 hr)	93	100 (3.7E 12)
Neptunium-237	93	0.01 (3.7E 8)
Neptunium-238	93	10 (3.7E 11)
Neptunium-239	93	100 (3.7E 12)
Neptunium-240	93	100 (3.7E 12)
Nickel-56	28	10 (3.7E 11)
Nickel-57	28	10 (3.7E 11)
Nickel-59	28	100 (3.7E 12)
Nickel-63	28	100 (3.7E 12)
Nickel-65	28	100 (3.7E 12)
Nickel-66	28	10 (3.7E 11)
Niobium-88	41	100 (3.7E 12)
Niobium-89 (66 min)	41	100 (3.7E 12)
Niobium-89 (122 min)	41	100 (3.7E 12)
Niobium-90	41	10 (3.7E 11)
Niobium-93m	41	100 (3.7E 12)
Niobium-94	41	10 (3.7E 11)

Appendix A to Table 3-6C Radionuclides		
Radionuclide	Atomic Number	Final RQ Ci (Bq)
Niobium-95m	41	100 (3.7E 12)
Niobium-95	41	10 (3.7E 11)
Niobium-96	41	10 (3.7E 11)
Niobium-97	41	100 (3.7E 12)
Niobium-98	41	1000 (3.7E 13)
Osmium-180	76	1000 (3.7E 13)
Osmium-181	76	100 (3.7E 12)
Osmium-182	76	100 (3.7E 12)
Osmium-185	76	10 (3.7E 11)
Osmium-189m.	76	1000 (3.7E 13)
Osmium-191m	76	1000 (3.7E 13)
Osmium-191	76	100 (3.7E 12)
Osmium-193	76	100 (3.7E 12)
Osmium-194	76	1 (3.7E 10)
Palladium-100	46	100 (3.7E 12)
Palladium-101	46	100 (3.7E 12)
Palladium-103	46	100 (3.7E 12)
Palladium-107	46	100 (3.7E 12)
Palladium-109	46	1000 (3.7E 13)
Phosphorus-32	15	0.1 (3.7E 9)
Phosphorus-33	15	1 (3.7E 10)
Platinum-186	78	100 (3.7E 12)
Platinum-188	78	100 (3.7E 12)
Platinum-189	78	100 (3.7E 12)
Platinum-191	78	100 (3.7E 12)
Platinum-193m	78	100 (3.7E 12)
Platinum-193	78	1000 (3.7E 13)
Platinum-195m	78	100 (3.7E 12)
Platinum-197m	78	1000 (3.7E 13)
Platinum-197	78	1000 (3.7E 13)
Platinum-199	78	1000 (3.7E 13)
Platinum-200	78	100 (3.7E 12)
Plutonium-234	94	1000 (3.7E 13)
Plutonium-235	94	1000 (3.7E 13)
Plutonium-236	94	0.1 (3.7E 9)
Plutonium-237	94	1000 (3.7E 13)
Plutonium-238	94	0.01 (3.7E 8)
Plutonium-239	94	0.01 (3.7E 8)
Plutonium-240	94	0.01 (3.7E 8)
Plutonium-241	94	1 (3.7E 10)
Plutonium-242	94	0.01 (3.7E 8)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Plutonium-243	94	1000 (3.7E 13)
Plutonium-244	94	0.01 (3.7E 8)
Plutonium-245	94	100 (3.7E 12)
Polonium-203	84	100 (3.7E 12)
Polonium-205	84	100 (3.7E 12)
Polonium-207	84	10 (3.7E 11)
Polonium-210	84	0.01 (3.7E 8)
Potassium-40	19	1 (3.7E 10)
Potassium-42	19	100 (3.7E 11)
Potassium-43	19	10 (3.7E 11)
Potassium-44	19	100 (3.7E 12)
Potassium-45	19	1000 (3.7E 13)
Praseodymium-136	59	1000 (3.7E 13)
Praseodymium-137	59	1000 (3.7E 13)
Praseodymium-138m	59	100 (3.7E 12)
Praseodymium-139	59	1000 (3.7E 13)
Praseodymium-142m	59	1000 (3.7E 13)
Praseodymium-142	59	100 (3.7E 12)
Praseodymium-143	59	10 (3.7E 11)
Praseodymium-144	59	1000 (3.7E 13)
Praseodymium-145	59	1000 (3.7E 13)
Praseodymium-147	59	1000 (3.7E 13)
Promethium-141	61	1000 (3.7E 13)
Promethium-143	61	100 (3.7E 12)
Promethium-144	61	10 (3.7E 11)
Promethium-145	61	100 (3.7E 12)
Promethium-146	61	10 (3.7E 11)
Promethium-147	61	10 (3.7E 11)
Promethium-148m	61	10 (3.7E 11)
Promethium-148	61	10 (3.7E 11)
Promethium-149	61	100 (3.7E 12)
Promethium-150	61	100 (3.7E 12)
Promethium-151	61	100 (3.7E 12)
Protactinium-227	91	100 (3.7E 12)
Protactinium-228	91	10 (3.7E 11)
Protactinium-230	91	10 (3.7E 11)
Protactinium-231	91	0.01 (3.7E 8)
Protactinium-232	91	10 (3.7E 11)
Protactinium-233	91	100 (3.7E 12)
Protactinium-234	91	10 (3.7E 11)
Radium-223	88	1 (3.7E 10)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Radium-224	88	10 (3.7E 11)
Radium-225	88	1 (3.7E 10)
Radium-226F.	88	0.1 (3.7E 9)
Radium-227	88	1000 (3.7E 13)
Radium-228	88	0.1 (3.7E 9)
Radon-220	86	0.1 (3.7E 9)
Radon-222	86	0.1 (3.7E 9)
Rhenium-177	75	1000 (3.7E 13)
Rhenium-178	75	1000 (3.7E 13)
Rhenium-181	75	100 (3.7E 12)
Rhenium-182 (12.7 hr)	75	10 (3.7E 11)
Rhenium-182 (64.0 hr)	75	10 (3.7E 11)
Rhenium-184m	75	10 (3.7E 11)
Rhenium-184	75	10 (3.7E 11)
Rhenium-186m	75	10 (3.7E 11)
Rhenium-186	75	100 (3.7E 12)
Rhenium-187	75	1000 (3.7E 13)
Rhenium-188m	75	1000 (3.7E 13)
Rhenium-188	75	1000 (3.7E 13)
Rhenium-189	75	1000 (3.7E 13)
Rhodium-99m	45	100 (3.7E 12)
Rhodium-99	45	10 (3.7E 11)
Rhodium-100	45	10 (3.7E 11)
Rhodium-101m	45	100 (3.7E 12)
Rhodium-101	45	10 (3.7E 11)
Rhodium-102m	45	10 (3.7E 11)
Rhodium-102	45	10 (3.7E 11)
Rhodium-103m	45	1000 (3.7E 13)
Rhodium-105	45	100 (3.7E 12)
Rhodium-106m	45	10 (3.7E 11)
Rhodium-107	45	1000 (3.7E 13)
Rubidium-79	37	1000 (3.7E 13)
Rubidium-81m	37	1000 (3.7E 13)
Rubidium-81	37	100 (3.7E 12)
Rubidium-82m	37	10 (3.7E 11)
Rubidium-83	37	10 (3.7E 11)
Rubidium-84	37	10 (3.7E 11)
Rubidium-86	37	10 (3.7E 11)
Rubidium-88	37	1000 (3.7E 13)
Rubidium-89	37	1000 (3.7E 13)
Rubidium-87	37	10 (3.7E 11)

Appendix A to Table 3-6C Radionuclides		
Radionuclide	Atomic Number	Final RQ Ci (Bq)
Ruthenium-94	44	1000 (3.7E 13)
Ruthenium-97	44	100 (3.7E 12)
Ruthenium-103	44	10 (3.7E 11)
Ruthenium-105	44	100 (3.7E 12)
Ruthenium-106	44	1 (3.7E 10)
Samarium-141m	62	1000 (3.7E 13)
Samarium-141	62	1000 (3.7E 13)
Samarium-142	62	1000 (3.7E 13)
Samarium-145	62	100 (3.7E 12)
Samarium-146	62	0.01 (3.7E 8)
Samarium-147	62	0.01 (3.7E 8)
Samarium-151	62	10 (3.7E 11)
Samarium-153	62	100 (3.7E 12)
Samarium-155	62	1000 (3.7E 13)
Samarium-156	62	100 (3.7E 12)
Scandium-43	21	1000 (3.7E 13)
Scandium-44m	21	10 (3.7E 11)
Scandium-44	21	100 (3.7E 12)
Scandium-46	21	10 (3.7E 11)
Scandium-47	21	100 (3.7E 12)
Scandium-48	21	10 (3.7E 11)
Scandium-49	21	1000 (3.7E 13)
Selenium-70	34	1000 (3.7E 13)
Selenium-73m	34	100 (3.7E 12)
Selenium-73	34	10 (3.7E 11)
Selenium-75	34	10 (3.7E 11)
Selenium-79	34	10 (3.7E 11)
Selenium-81m	34	1000 (3.7E 13)
Selenium-81	34	1000 (3.7E 13)
Selenium-83	34	1000 (3.7E 13)
Silicon-31	14	1000 (3.7E 13)
Silicon-32	14	1 (3.7E 10)
Silver-102	47	100 (3.7E 12)
Silver-103	47	1000 (3.7E 13)
Silver-104m	47	1000 (3.7E 13)
Silver-104	47	1000 (3.7E 13)
Silver-105	47	10 (3.7E 11)
Silver-106m	47	10 (3.7E 11)
Silver-106	47	1000 (3.7E 13)
Silver-108m	47	10 (3.7E 11)
Silver-110m	47	10 (3.7E 11)



<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Silver-111	47	10 (3.7E 11)
Silver-112	47	100 (3.7E 12)
Silver-115	47	1000 (3.7E 13)
Sodium-22	11	10 (3.7E 11)
Sodium-24	11	10 (3.7E 11)
Strontium-80	38	100 (3.7E 12)
Strontium-81	38	1000 (3.7E 13)
Strontium-83	38	100 (3.7E 12)
Strontium-85m	38	1000 (3.7E 13)
Strontium-85	38	10 (3.7E 11)
Strontium-87m	38	100 (3.7E 12)
Strontium-89	38	10 (3.7E 11)
Strontium-90	38	0.1 (3.7E 9)
Strontium-91	38	10 (3.7E 11)
Strontium-92	38	100 (3.7E 12)
Sulfur-35	16	1 (3.7E 10)
Tantalum-172	73	100 (3.7E 12)
Tantalum-173	73	100 (3.7E 12)
Tantalum-174	73	100 (3.7E 12)
Tantalum-175	73	100 (3.7E 12)
Tantalum-176	73	10 (3.7E 11)
Tantalum-177	73	1000 (3.7E 13)
Tantalum-178	73	1000 (3.7E 13)
Tantalum-179	73	1000 (3.7E 13)
Tantalum-180m	73	1000 (3.7E 13)
Tantalum-180	73	100 (3.7E 12)
Tantalum-182m	73	1000 (3.7E 13)
Tantalum-182	73	10 (3.7E 11)
Tantalum-183	73	100 (3.7E 12)
Tantalum-184	73	10 (3.7E 11)
Tantalum-185	73	1000 (3.7E 13)
Tantalum-186	73	1000 (3.7E 13)
Technetium-93m	43	1000 (3.7E 13)
Technetium-93	43	100 (3.7E 12)
Technetium-94m	43	100 (3.7E 12)
Technetium-94	43	10 (3.7E 11)
Technetium-96m	43	1000 (3.7E 13)
Technetium-96	43	10 (3.7E 11)
Technetium-97m	43	100 (3.7E 12)
Technetium-97	43	100 (3.7E 12)
Technetium-98	43	10 (3.7E 11)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Technetium-99m	43	100 (3.7E 12)
Technetium-99	43	10 (3.7E 11)
Technetium-101	43	1000 (3.7E 13)
Technetium-104	43	1000 (3.7E 13)
Tellurium-116	52	1000 (3.7E 13)
Tellurium-121m	52	10 (3.7E 11)
Tellurium-121	52	10 (3.7E 11)
Tellurium-123m	52	10 (3.7E 11)
Tellurium-123	52	10 (3.7E 11)
Tellurium-125m	52	10 (3.7E 11)
Tellurium-127m	52	10 (3.7E 11)
Tellurium-127	52	1000 (3.7E 13)
Tellurium-129m	52	10 (3.7E 11)
Tellurium-129	52	1000 (3.7E 13)
Tellurium-131m	52	10 (3.7E 11)
Tellurium-131	52	1000 (3.7E 13)
Tellurium-132	52	10 (3.7E 11)
Tellurium-133m	52	1000 (3.7E 13)
Tellurium-133	52	1000 (3.7E 13)
Tellurium-134	52	1000 (3.7E 13)
Terbium-147	65	100 (3.7E 12)
Terbium-149	65	100 (3.7E 12)
Terbium-150	65	100 (3.7E 12)
Terbium-151	65	10 (3.7E 11)
Terbium-153	65	100 (3.7E 12)
Terbium-154	65	10 (3.7E 11)
Terbium-155	65	100 (3.7E 12)
Terbium-156m (5.0 hr)	65	1000 (3.7E 13)
Terbium-156m (24.4 hr)	65	1000 (3.7E 13)
Terbium-156	65	10 (3.7E 11)
Terbium-157	65	100 (3.7E 12)
Terbium-158	65	10 (3.7E 11)
Terbium-160	65	10 (3.7E 11)
Terbium-161	65	100 (3.7E 12)
Thallium-194m	81	100 (3.7E 12)
Thallium-194	81	1000 (3.7E 13)
Thallium-195	81	100 (3.7E 12)
Thallium-197	81	100 (3.7E 12)
Thallium-198m	81	100 (3.7E 12)
Thallium-198	81	10 (3.7E 11)
Thallium-199	81	100 (3.7E 12)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Thallium-200	81	10 (3.7E 11)
Thallium-201	81	1000 (3.7E 13)
Thallium-202	81	10 (3.7E 11)
Thallium-204	81	10 (3.7E 11)
Thorium-226	90	100 (3.7E 12)
Thorium-227	90	1 (3.7E 10)
Thorium-228	90	0.01 (3.7E 8)
Thorium-229	90	0.001 (3.7E 7)
Thorium-230	90	0.01 (3.7E 8)
Thorium-231	90	100 (3.7E 12)
Thorium-232F	90	0.001 (3.7E 7)
Thorium-234	90	100 (3.7E 12)
Thulium-162	69	1000 (3.7E 13)
Thulium-166	69	10 (3.7E 11)
Thulium-167	69	100 (3.7E 12)
Thulium-170	69	10 (3.7E 11)
Thulium-171	69	100 (3.7E 12)
Thulium-172	69	100 (3.7E 12)
Thulium-173	69	100 (3.7E 12)
Thulium-175	69	1000 (3.7E 13)
Tin-110	50	100 (3.7E 12)
Tin-111	50	1000 (3.7E 13)
Tin-113	50	10 (3.7E 11)
Tin-117m	50	100 (3.7E 12)
Tin-119m	50	10 (3.7E 11)
Tin-121m	50	10 (3.7E 11)
Tin-121	50	1000 (3.7E 13)
Tin-123m	50	1000 (3.7E 13)
Tin-123	50	10 (3.7E 11)
Tin-125	50	10 (3.7E 11)
Tin-126	50	1 (3.7E 10)
Tin-127	50	100 (3.7E 12)
Tin-128	50	1000 (3.7E 13)
Titanium-44	22	1 (3.7E 10)
Titanium-45	22	1000 (3.7E 13)
Tungsten-176	74	1000 (3.7E 13)
Tungsten-177	74	100 (3.7E 12)
Tungsten-178	74	100 (3.7E 12)
Tungsten-179	74	1000 (3.7E 13)
Tungsten-181	74	100 (3.7E 12)
Tungsten-185	74	10 (3.7E 11)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Tungsten-187	74	100 (3.7E 12)
Tungsten-188	74	10 (3.7E 11)
Uranium-230	92	1 (3.7E 10)
Uranium-231	92	1000 (3.7E 13)
Uranium-232	92	0.01 (3.7E 8)
Uranium-233	92	0.1 (3.7E 9)
Uranium-234f	92	0.1 (3.7E 9)
Uranium-235f	92	0.1 (3.7E 9)
Uranium-236	92	0.1 (3.7E 9)
Uranium-237	92	100 (3.7E 12)
Uranium-238f	92	0.1& (3.7E 9)
Uranium-239	92	1000 (3.7E 13)
Uranium-240	92	1000 (3.7E 13)
Vanadium-47	23	1000 (3.7E 13)
Vanadium-48	23	10 (3.7E 11)
Vanadium-49	23	1000 (3.7E 13)
Xenon-120	54	100 (3.7E 12)
Xenon-121	54	10 (3.7E 11)
Xenon-122	54	100 (3.7E 12)
Xenon-123	54	10 (3.7E 11)
Xenon-125	54	100 (3.7E 12)
Xenon-127	54	100 (3.7E 12)
Xenon-129m	54	1000 (3.7E 13)
Xenon-131m	54	1000 (3.7E 13)
Xenon-133m	54	1000 (3.7E 13)
Xenon-133	54	1000 (3.7E 13)
Xenon-135m	54	10 (3.7E 11)
Xenon-135	54	100 (3.7E 12)
Xenon-138	54	10 (3.7E 11)
Ytterbium-162	70	1000 (3.7E 13)
Ytterbium-166	70	10 (3.7E 11)
Ytterbium-167	70	1000 (3.7E 13)
Ytterbium-169	70	10 (3.7E 11)
Ytterbium-175	70	100 (3.7E 12)
Ytterbium-177	70	1000 (3.7E 13)
Ytterbium-178	70	1000 (3.7E 13)
Yttrium-86m	39	1000 (3.7E 13)
Yttrium-86	39	10 (3.7E 11)
Yttrium-87	39	10 (3.7E 11)
Yttrium-88	39	10 (3.7E 11)
Yttrium-90m	39	100 (3.7E 12)

<b>Appendix A to Table 3-6C Radionuclides</b>		
<b>Radionuclide</b>	<b>Atomic Number</b>	<b>Final RQ Ci (Bq)</b>
Yttrium-90	39	10 (3.7E 11)
Yttrium-91m	39	1000 (3.7E 13)
Yttrium-91	39	10 (3.7E 11)
Yttrium-92	39	100 (3.7E 12)
Yttrium-93	39	100 (3.7E 12)
Yttrium-94	39	1000 (3.7E 13)
Yttrium-95	39	1000 (3.7E 13)
Zinc-62	30	100 (3.7E 12)
Zinc-63	30	1000 (3.7E 13)
Zinc-65	30	10 (3.7E 11)
Zinc-69m	30	100 (3.7E 12)
Zinc-69	30	1000 (3.7E 13)
Zinc-71m	30	100 (3.7E 12)
Zinc-72	30	100 (3.7E 12)
Zirconium-86	40	100 (3.7E 12)
Zirconium-88	40	10 (3.7E 11)
Zirconium-89	40	100 (3.7E 12)
Zirconium-93	40	1 (3.7E 10)
Zirconium-95	40	10 (3.7E 11)
Zirconium-97	40	10 (3.7E 11)

- Ci Curie. The curie represents a rate of radioactive decay. One curie is the quantity of any radioactive nuclide which undergoes  $3.7 \times 10^{10}$  disintegrations per second.
- Bq Becquerel. The becquerel represents a rate of radioactive decay. One becquerel is the quantity of any radioactive nuclide which undergoes one disintegration per second. One curie is equal to  $3.7 \times 10^{10}$  becquerel.
- @ Final RQs for all radionuclides apply to chemical compounds containing the radionuclides and elemental forms regardless of the diameter of pieces of solid material.
- & The adjusted RQ of one curie applies to all radionuclides not otherwise listed. Whenever the RQs in Table 302.4 and this appendix to the table are in conflict, the lowest RQ shall apply. For example, uranyl acetate and uranyl nitrate have adjusted RQs shown in Table 302.4 of 100 pounds, equivalent to about one-tenth the RQ level for uranium-238 listed in this appendix.
- E Exponent to the base 10. For example,  $1.3 \times 10^2$  is equal to 130 while  $1.3 \times 10^3$  is equal to 1300.
- m Signifies a nuclear isomer which is a radionuclide in a higher energy metastable state relative to the parent isotope.
- f Notification requirements for releases of mixtures or solutions of radionuclides can be found in Section 302.6(b) of this rule. Final RQs for the following four common radionuclide mixtures are provided: radium-226 in secular equilibrium with its daughters (0.053 curie); natural uranium (0.1 curie); natural uranium in

secular equilibrium with its daughters (0.052 curie); and natural thorium in secular equilibrium with its daughters (0.011 curie).

## **APPENDIX 3-6D**

### **EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE**

#### **3-6D.1 POTENTIAL EFFECTS OF INCOMPATIBILITY**

(a) Many hazardous wastes, when mixed with other waste or materials at a hazardous waste facility, can produce effects that are harmful to human health and the environment, such as (1) heat or pressure; (2) fire or explosion; (3) violent reaction; (4) toxic dusts, mists, fumes, or gases; and (5) flammable fumes or gases.

(b) Section 3-6D.2 lists examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended to be a guide indicating the need for special precautions in managing these potentially incompatible waste materials or components.

(c) This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze the wastes so that uncontrolled substances or reactions of the type listed below are not created, whether or not they are listed below.

(d) Potentially incompatible wastes can be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutralizes them (e.g., a strong acid mixed with a strong base) or that controls the substances produced (e.g., by generating flammable gases in a closed tank equipped so that ignition cannot occur and burning the gases in an incinerator).

#### **3-6D.2 EXAMPLES**

In Table 3-6D below, the mixing of a Group A material with a Group B material may have the potential consequence noted.

<b>TABLE 3-6D</b>	
<b>EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE</b>	
<b>Group 1-A</b>	<b>Group 1-B</b>
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte, acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalies	---
Lime wastewater	Pickling liquor and other corrosive acids
Lime and water	Spent acid
Spent caustic	Spent mixed acid Spent sulfuric acid
Potential consequences: heat generation; violent reaction.	
<b>Group 2-A</b>	<b>Group 2-B</b>
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in Group 1-A or Group 1-B
Potential consequences: fire or explosion; generation of flammable hydrogen gas.	
<b>Group 3-A</b>	<b>Group 3-B</b>
Alcohols	Any concentrated waste in Groups 1-A or 1-B
Water	Calcium Lithium Metal hydrides Potassium $\text{SO}_2\text{Cl}_2$ , $\text{SOCl}_2$ , $\text{PCl}_3$ , $\text{CH}_3\text{SiCl}_3$ Other water-reactive waste
Potential consequences: fire, explosion, or heat generation; generation of flammable or toxic gases.	



TABLE 3-6D	
EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE	
Group 4-A	Group 4-B
Alcohols	Concentrated Group 1-A or 1-B wastes
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	
Potential consequences: fire, explosion, or violent reaction.	
Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes
Potential consequences: generation of toxic hydrogen cyanide or hydrogen sulfide gas.	
Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acids
Chlorites	Group 2-A wastes
Chromic acid	Group 4-A wastes
Hyphochlorites	Other flammable and combustible wastes
Nitrates	
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	
Potential consequences: fire, explosion, or violent reaction.	
Source: Law, Regulations, and Guidelines for Handling of Hazardous Waste. California Department of Health, February 1975.	

### **3-7 CULTURAL RESOURCES**

#### **3-7.1 INTRODUCTION**

This section establishes standards for identifying, assessing the significance of, mitigating adverse effects on, and preserving the archaeological, cultural, and historical resources at USAKA. In addition to the specific procedural references in this section, the standards for cultural resources shall incorporate all applicable procedures that are in Part 2.

#### **3-7.2 DERIVATION**

Section 3-7 of the Standards is derived primarily from the National Historic Preservation Act (NHPA), as amended, which establishes the responsibilities of federal agencies and implementing regulations in 36 CFR 800, the U.S. Archaeological and Historic Preservation Act (AHPA), and Army Regulation 200-4 for Historic Preservation. Subsidiary regulations for promoting cultural preservation from the RMI Historic Preservation Act 1991 (45 MIRC, Chapter 2) also were consulted.

#### **3-7.3 SUMMARY OF CHANGES**

The cultural resources standards are comparable to the requirements of the NHPA (as amended in 1992 by the Fowler Amendment) and the AHPA. The RMI Historic Preservation Officer (RMIHPO) shall exercise the function of the state historic officer in accordance with NHPA. All formal consultation and coordination between USAKA and the RMIHPO and the RMI Advisory Council on Historic Preservation (RMIACHP) under these Standards will be conducted through RMIEPA. All references in this section to the RMIHPO require coordination through RMIEPA as the point of contact within the RMI.

The RMIACHP reviews all USAKA actions requiring consultation under these standards. References to the U.S. National Register of Historic Places and Historic Landmarks have been replaced by references to the RMI National Register of Historic Places.

All coordination on cultural resources by USAKA and the RMIHPO shall be performed and documented through the review procedures specified in a DEP, as discussed in Sections 2-17.3 and 3-7.5.2(a) and (b).

#### **3-7.4 PLANS**

##### **3-7.4.1 Historic Preservation Plan**

Within one year of the effective date of these Standards, the Commander, USAKA, shall, in consultation with the RMIHPO and the RMIACHP prepare and implement a historic preservation plan for USAKA, using AR 200-4 and DA PAM 200-4

### **[3-7.4.1]**

as a guide. Once a year, USAKA shall review the HPP and revise it as warranted. All revisions shall be submitted to the RMIHPO and RMIACHP before they are adopted. All comments from the RMIHPO and RMIACHP shall be considered before the revisions are adopted. If comments are not adopted in the final revisions, USAKA shall communicate to the RMI the reasons for not incorporating the review comments. At a minimum, the plan shall establish a program to:

- (a) Integrate historic preservation requirements with the planning and conduct of military programs, testing, construction, and other undertakings.
- (b) Ensure coordination with the RMIHPO and RMIACHP on the effects of USAKA operations and projects on cultural resources.
- (c) Establish a procedure for identifying cultural resources through archival research, field surveys, and interviews with sources knowledgeable about local history, prehistory, and culture.
- (d) Set priorities and a schedule for studies and surveys that are designed to acquire cultural data for developing, evaluating, and managing the inventory of historic properties.
- (e) Assess the eligibility of all identified cultural resources for, and nominate properties to, the RMI National Register of Historic Places.
- (f) Provide guidelines for the protection and treatment of historic properties eligible or potentially eligible for the RMI National Register of Historic Places.
- (g) Establish curation procedures for all recovered cultural materials.
- (h) Rank installation undertakings for their potential to affect cultural resources.
- (i) Avoid or minimize adverse effects on historical and cultural resources.

## **3-7.5 PERFORMANCE STANDARDS**

### **3-7.5.1 General**

- (a) All coordination on historic preservation between the Commander, USAKA, and the RMIHPO shall be documented and retained as outlined in Section 2-13.
- (b) The Commander, USAKA shall consult with other federal agencies engaged in activities at USAKA to reach agreement on developing alternatives or measures for preventing or reducing effects on cultural resources that address both the needs of the undertaking and the concerns about preservation.

(c) The evaluation process established in Section 3-7 may be implemented flexibly, accommodating differing program requirements, provided that the purposes of the Standards are met.

(d) The Commander, USAKA, shall complete the review and documentation process before initiating an undertaking. The Commander, USAKA, shall ensure that the process for historic preservation is initiated early in the planning stages of an undertaking, when the widest feasible range of alternatives is open for consideration. A schedule for completing the process that is consistent with the schedules for planning and approval of the undertaking shall be established.

### **3-7.5.2 Document of Environmental Protection**

#### **(a) Programmatic Document of Environmental Protection**

Within one year of the effective date of these Standards, the Commander, USAKA, shall initiate completion of a programmatic DEP by submitting an NCA to the Appropriate Agencies. The NCA shall address the potential effects on cultural resources of the typical continuing operations at USAKA and shall establish procedures for mitigating adverse effects that are consistent with the process established by Sections 3-7 and the Historic Preservation Plan.

#### **(b) Specific Document of Environmental Protection**

For undertakings that are not addressed by the programmatic DEP (Section 3-7.5.2(a) above) and for which an adverse effect is determined to be potential in accordance with Section 3-7.5.6, the Commander, USAKA, shall complete a DEP in accordance with Section 2-17.3 before initiating the undertaking.

### **3-7.5.3 Identifying Cultural Resources**

#### **(a) Assessing Information Needs**

(1) After the Commander, USAKA, determines that a proposed project, activity, or program constitutes an undertaking, he or she shall seek review and comment by the RMIHPO in accordance with the following steps:

(i) Review the existing information, including information assembled and cultural resource surveys conducted in accordance with the Historic Preservation Plan (Section 3-7.4.1), on cultural resources potentially affected by the undertaking, including data on the likelihood that unidentified cultural resources exist in the area of potential effects.

(ii) Request the views of the RMIHPO on further actions for identifying cultural resources that may be affected.

**[3-7.5.3(b)]**

(iii) Seek information from interested persons likely to have knowledge of cultural resources in the area or concerns about them.

(2) On the basis of this assessment, the Commander, USAKA, shall determine the need for further action, such as field surveys and predictive modeling, for identifying cultural resources.

**(b) Evaluating Historical Significance**

(1) In consultation with the RMIHPO, the Commander, USAKA, shall apply RMI National Register of Historic Places eligibility criteria (Section 3-7.11.4) to cultural resources that may be affected by the undertaking and that have not been evaluated previously. The passage of time or changing criteria for significance may justify reevaluating properties that were previously determined to be eligible or ineligible. Public notice, as specified in Section 2-7.3.2(k), shall be issued by USAKA when there is a listing or determination of eligibility for listing of USAKA properties on the RMI National Register of Historic Places.

(2) If the Commander, USAKA, and the RMIHPO agree that a cultural resource is eligible under the criteria, the resource shall be considered eligible for the RMI National Register of Historic Places.

(3) If the Commander, USAKA, and RMIHPO agree that the criteria are not met, the resource shall be considered not eligible for the RMI National Register of Historic Places.

(4) If the Commander, USAKA, and the RMIHPO do not agree on determination of eligibility, USAKA or the RMIHPO may request a determination of eligibility from the RMIACHP.

**(c) If No Cultural Resources Are Found**

(1) If the Commander, USAKA, determines in accordance with these Standards that there are no cultural resources that may be affected by the undertaking, the Commander, USAKA, shall submit documentation of this finding to the RMIHPO. Unless the RMIHPO objects within 90 days of receiving the documentation, no further steps are required.

(2) If the RMIHPO does not agree with the finding that there are no cultural resources that may be affected by the undertaking, the matter shall be resolved as stated under the provisions for conflict resolution in Section 2-19.

(d) If cultural resources are found and they may be affected by the undertaking, the Commander, USAKA, shall assess the potential effects in accordance with Section 3-7.5.4, below.

### **3-7.5.4 Assessing Potential for Effects on Cultural Resources**

#### **(a) Applying Criteria of Effect**

(1) In consultation with the RMIHPO, the Commander, USAKA, shall apply the Criteria of Effect (Section 3-7.5.4(a)(2), below) to cultural resources that may be affected, considering the views, if any, of interested persons.

(2) An undertaking affects a cultural resource when that resource may be eligible for listing or is listed on the RMI National Register of Historic Places and the undertaking may alter a characteristic of the resource. For determining effects, changes to features of the resource's location, setting, or use may be relevant, depending on the resource's significant characteristics, and should be considered.

#### **(b) If No Effect Is Found**

If the Commander, USAKA, determines that the undertaking will have no effect on cultural resources, he or she shall notify the RMIHPO and interested persons who have made their concerns known, and document the finding, which shall be available for public inspection. Unless the RMIHPO objects within 90 days of receiving the notice, the Commander, USAKA, is not required to take further steps. If the RMIHPO believes that the undertaking will have an effect, he or she shall notify the Commander, USAKA, of the reasons for the determination and shall try to reconcile the positions. If the positions cannot be reconciled, all pertinent documents shall be submitted to the RMIACHP for review and comment. If the Commander, USAKA, and the RMIHPO and the RMIACHP cannot agree, conflict resolution procedures (Section 2-19) may be invoked.

### **3-7.5.5 Determining If an Effect Is Adverse**

If an effect on cultural resources is found, the Commander, USAKA shall submit an NPA to the RMIHPO. USAKA, in consultation with the RMIHPO, shall apply the following Criteria of Adverse Effect to determine whether the effect of the undertaking should be considered adverse.

(a) An undertaking is considered as having an adverse effect when the effect on a cultural resource may diminish the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on cultural resources include, but are not limited to:

(1) Physical destruction, damage, or alteration of all or part of the resource.

(2) Isolation of the resource from, or alteration of the character of, the resource's setting when the character contributes to the property's eligibility for the RMI National Register of Historic Places.

[3-7.5.5(b)]

(3) Introduction of visual, audible, or atmospheric elements that are out of character with the resource or that change its setting.

(4) Neglect of a resource that results in its deterioration or destruction.

(5) Transfer, lease, or sale of the property.

(b) The effects of an undertaking that would otherwise be found to be adverse may be considered not adverse (e.g., mitigated) through the development of a data-recovery plan for cultural, archaeological, or historic resources (Section 3-7.5.7) by the Commander, USAKA, which shall be submitted for review and comment to the RMIHPO, and the RMIACHP prior to implementation. For the purposes of these Standards, a cultural resource data recovery plan shall be developed if any of the following apply:

(1) The cultural resource is of value only for its potential contribution to archaeological, historical, or architectural research and data recovery, and when such value can be substantially preserved through conducting appropriate research and data recovery and such research is conducted in accordance with applicable professional standards and guidelines.

(2) The undertaking is limited to rehabilitating buildings and structures and is conducted in a way that preserves the historical and architectural value of the affected cultural resources, consistent with the U.S. Department of the Interior *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*.

(3) When the undertaking is limited to the transfer, lease, or sale of a historic property, and adequate restrictions or conditions are included as mitigation to ensure preservation of the property's significant historic features.

(c) If the Commander, USAKA, finds that the effect is not adverse, he or she shall submit all pertinent documents to the RMIHPO for review and comment.

(1) If the Commander, USAKA, and the RMIHPO agree on the finding of no adverse effect, or the RMIHPO does not provide comments within 90 days of receipt, the finding shall stand, and the Commander, USAKA, is not required to take further steps. If the RMIHPO believes that the undertaking will have an adverse effect, he or she shall notify the Commander, USAKA, of the reasons for the determination and shall try to reconcile the positions. If the positions cannot be reconciled, all pertinent documents shall be submitted to the RMIACHP for review and comment.

(2) If the Commander, USAKA, the RMIHPO, and the RMIACHP cannot agree, conflict resolution procedures (Section 2-19) may be invoked.

### **3-7.5.6 When the Effect Is Determined to be Adverse**

If the effects on cultural resources are determined to be adverse, the Commander, USAKA, shall initiate or continue the DEP process by submitting the NPA (or revised NPA) developed in accordance with Section 3-7.5.5 to the Appropriate Agencies and the RMIHPO and RMIACHP.

- (a) Interested parties shall be invited to participate as parties to the review and comment process when deemed appropriate by the Commander, USAKA, or by the RMIHPO. Interested parties shall include, but not be limited to, customary and traditional landowners.
- (b) The Commander, USAKA, shall furnish each of the parties with the documentation required by Section 3-7.5.9(b) and with other such documentation as may be developed during the review and comment process.
- (c) During the review of the NPA and Draft DEP, the RMIHPO and the RMIACHP may offer any comments, including stipulations, for managing the resources of concern (e.g., mitigation).

### **3-7.5.7 Resources Discovered During an Undertaking**

When the identification efforts of the Commander, USAKA, indicate that cultural resources are likely to be discovered during implementation of an undertaking, an archaeological monitoring plan shall be developed for protection of such properties if discovered. The plan shall be included in project documentation. The archaeological monitoring plan may be developed as a standardized plan and tailored thereafter for specific undertakings.

- (a) On discovering a previously unidentified cultural resource, the Commander, USAKA, shall cease all ground-disturbing activities in the immediate area of the find until the RMIHPO has been notified of the discovery and shall implement appropriate mitigation measures developed in consultation with the RMIHPO to minimize the effects on the resource or to recover as much of the resource as possible (conforming to professional standards for research). In such instances, a formal mitigation plan that is coordinated with the RMIHPO may not be necessary, depending on the potential severity of the effect on the resource.
- (b) When a newly discovered cultural resource has not been included previously in or determined eligible for the RMI National Register of Historic Places, the Commander, USAKA, may assume that the resource is eligible for the purposes of these Standards.

### **3-7.5.8 Emergency Undertakings**

An emergency undertaking is in advance of or in response to a catastrophic event (e.g., explosion) or a natural disaster that poses an imminent threat to public health or



safety. Determination of whether an undertaking represents a response to a natural disaster or an imminent threat to public health or safety will be made by the USAKA Commander. The emergency undertaking is performed within 5 days of the disaster or imminent threat. If possible, the Commander, USAKA, shall immediately notify the RMIHPO. If sending prior notification to the RMIHPO is impossible, the Commander, USAKA, shall notify the RMIHPO of the emergency response within 24 hours of the response, as specified in Section 2-6.3.2(h), after which the Commander, USAKA, and the RMIHPO shall jointly plan effective mitigation measures.

### **3-7.5.9 Documentation Requirements**

#### **(a) Finding of No Adverse Effect**

The purpose of this documentation is to furnish information sufficient for explaining how the Commander, USAKA, reached the finding of no adverse effect. The resulting documentation shall be retained in accordance with Section 2-13. The required documentation is as follows:

- (1) A description of the undertaking, including photographs, maps, and drawings, as necessary.
- (2) A description of the cultural resources that may be affected by the undertaking.
- (3) A description of the efforts expended to identify cultural resources.
- (4) A statement of how and why the Criteria of Adverse Effect were not met.
- (5) The views of the RMIHPO, the RMIACHP, federal agencies, and the public, if any were provided, and a description of the means used to solicit the views.

#### **(b) Finding of Adverse Effect.**

For a finding of adverse effect, the required documentation is as follows:

- (1) A description of the undertaking, including photographs, maps, and drawings, as necessary.
- (2) A description of the efforts to identify cultural resources.
- (3) A description of the affected cultural resources developed by using materials already compiled during the evaluation of significance, as appropriate.
- (4) A description of the undertaking's effects on cultural resources.

#### **(c) Conflict Resolution**

If conflict resolution under Section 2-19 is necessary, the following documentation shall be submitted for review:

- (1) A description of the undertaking, with photographs, maps, and drawings, as necessary.
- (2) A description of the efforts made to identify cultural resources.
- (3) A description of the potentially affected cultural resources, including information on the significant characteristics of each resource.
- (4) A description of the effects of the undertaking on cultural resources and the basis for the determinations.
- (5) A description and evaluation of alternatives or mitigation measures that the Commander, USAKA, proposes for dealing with the undertaking's effects.
- (6) A description of the alternatives or mitigation measures that were considered but not chosen and the reasons for their rejection.
- (7) Documentation of the consultation with the RMIHPO on identifying and evaluating cultural resources, assessing effects, and considering alternatives or mitigation measures.
- (8) The planning and approval schedule for the undertaking.
- (9) Copies or summaries of written views submitted to the Commander, USAKA, on the effects of the undertaking on cultural resources and the alternatives for reducing or preventing the effects.

### **3-7.6 SPECIAL REQUIREMENTS**

#### **3-7.6.1 Surveys of Cultural Resources**

All preservation investigations performed in compliance with Section 3-7 shall conform to the standards and measures described in the acts cited in Section 3-7.2, the U.S. Department of the Interior *Standards and Guidelines for Archaeology and Historic Preservation* (48 FEWER 44716), U.S. Army requirements and regulations, and Sections 2-7.1.9, 2-9.2.6, and 2-13.3.5. The measures are designed to ensure that all preservation investigations are performed in conformance with professional and agency standards.

#### **3-7.6.2 Management of Cultural Resources**

All recovered prehistoric, cultural, or historic artifacts, objects, samples, and other material remains from historic-preservation studies at USAKA shall be properly analyzed and described and shall be included in final data-summary reports on the undertaking.

The Commander, USAKA, shall ensure that after the remains are analyzed and described, those that are not related to U.S. Government activities shall be deposited with the RMIHPO for permanent storage. Copies of final data-summary reports; photographic, graphic, and written records; field notes; and all other pertinent source data shall accompany the material remains for storage. Human skeletal remains that are determined to not be of United States origin also shall be deposited with pertinent source records with the RMIHPO for proper storage or disposition. Reburials shall be performed in accordance with applicable RMI law. Human skeletal remains discovered during an undertaking shall be retained by or released to the appropriate authorities. American remains shall be retained by the U.S. Government. All other remains shall be released to the RMI government for curation. In consultation with the RMIHPO, the United States shall determine the ethnicity of the remains. Copies of pertinent source records for the determination shall be submitted to the RMIHPO. No material cultural remains, except those resulting from U.S. activities, shall be stored at USAKA except for items that have been incorporated in displays or collections coordinated with and approved by the RMIHPO.

### **3-7.6.3 Protection of Archaeological Resources**

USAKA shall implement procedures to insure that USAKA personnel, contractors, representatives, visitors and dependents, while acting in individual capacities, do not remove, destroy or otherwise adversely affect cultural and archaeological resources at USAKA.

### **3-7.6.4 Eligibility Criteria for National Register**

Determining the significance of a cultural resource in Marshallese or Micronesian history, architecture, archaeology, and culture is based on an evaluation of the following criteria, which are the basis of eligibility for the RMI National Register of Historic Places. The criteria apply to districts, sites, buildings, structures, objects, oral traditions, submerged resources, and geographic locations that are characterized by integrity of location, design, setting, materials, workmanship, feeling, and association. A resource shall be recognized as having cultural and historical value if it appears to meet one or more of the following criteria:

- (a) Cultural value: The property is viewed by a group of people as important in maintaining the group's cultural identity (e.g., a traditional site).
- (b) Social value: The property plays a continuing important role in the social life of a group (e.g., a traditional fishing location).
- (c) Interpretive value: The property has current or potential use as an exhibit for educational purposes.
- (d) Research archaeological value: The property contains important information on a significant archaeological research question or questions.

- (e) Archival archaeological value: The property represents a class of properties identified in the Marshall Islands Cultural and Historic Preservation Plan or in a local cultural and historic preservation plan as containing information that should be preserved for archival purposes.
- (f) Architectural excellence: The property expresses the work of a master designer or builder or otherwise is a fine example of the architect's craft.
- (g) Architectural representativeness: The property is representative of an important style or period in the architectural history of the RMI.
- (h) Historical ambience: The property conveys a "sense of place," a character that is perceived by local residents or others as being both "out of the past" and worth retaining.
- (i) Aesthetic value: The property is perceived by local residents or others as both out of the past and pleasing to the eye.
- (j) Social historical value: The property is associated with a particular historical period, process, or trend in the social history of the RMI.
- (k) Particular historical value: The property is associated with a particular person or event that is important in RMI history (e.g., a place significantly associated with the 1944 invasion of the Marshall Islands).

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### 3-8 DEFINITIONS

***Acute criteria:*** See Criterion maximum concentration.

***Acutely hazardous waste:*** the hazardous wastes identified in Appendix 3-6B.2(c)(1) through (4) and in Table 3-6B.2(c)(5).

***Adequately wetted:*** sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

***Air quality emergency episode:*** the release or anticipated release of criteria air pollutants, or facility conditions posing an imminent threat to public health and safety.

***Allowable emissions:*** the quantity, rate, or concentration (or all three) of air-pollutant emissions from a stationary source as specified in the DEP (Section 2-17.3.4) for the source.

***Ambient air:*** the portion of the atmosphere that is external to buildings and to which the general public may be exposed.

***Appropriate agencies:*** agencies or their designated representatives that are given the opportunity to review and comment on the proposed actions of USAKA that relate to public health and safety and protection of the environment. The agencies are U.S. Environmental Protection Agency, Region IX, Office of Pacific Island Programs, San Francisco, California; Republic of the Marshall Islands Environmental Protection Authority, Republic of the Marshall Islands; U.S. Fish and Wildlife Service, Honolulu Office, Honolulu, Hawaii; U.S. National Marine Fisheries Service, Pacific Office, Honolulu, Hawaii; and U.S. Army Engineer Division, Pacific Ocean, Honolulu, Hawaii.

***Archaeological Resource:*** means any material remains of past human life or activities which are of archaeological interest. Shall include, but not be limited to: pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, earth ovens, coral spreads, graves, human skeletal materials, or any portion or piece of any of the foregoing items. No item shall be treated as an archeological resource under regulations under this paragraph unless such item is at least 100 years of age.

***Area of Potential Effects:*** for cultural resources, the geographic areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist.

***Asbestos-containing material:*** material containing more than 1 percent asbestos.

***Audit:*** the process that USAKA or an independent outside agency uses for reviewing the activities of USAKA to measure compliance with environmental standards.

**Baseline level:** the baseline condition relative to air quality for criteria pollutants that is established by calculating the ambient condition on the basis of source inventories. The baseline condition shall be established as of the day before the effective day of these Standards.

**Baseline or trend-assessment survey:** the planned sampling or measurement of parameters at set stations or in set areas in and near ocean disposal sites for a period of time sufficient to provide synoptic data for determining water quality, benthic, or biological conditions as a result of ocean disposal operations.

**Biological Assessment:** an evaluation of the potential effects of a USAKA activity on an endangered or threatened species, which is included in a Notice of Proposed Activity.

**Biota:** the animal and plant life of the Republic of the Marshall Islands considered as a total ecological entity.

**Breakdown condition:** a condition in which there is an unintentional and temporary noncompliance with limits in a DEP because of factors beyond the reasonable control of USAKA. A breakdown condition does not include noncompliance caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

**Bulk container:** a large container that can either be pulled or lifted mechanically onto a service vehicle or emptied mechanically into a service vehicle.

**Bypass:** the deliberate or accidental release of wastewater into surface water without application of the required treatment process.

**CERCLA:** Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986.

**Chronic criteria:** See Criterion continuous concentration.

**Coastal waters:** for the purposes of classifying the size of discharges, the waters of the coastal zone, including "near-shore waters," "offshore waters," and the brackish, fresh, and salt waters that are subject to the ebb and flow of the tide.

**Collection:** the act of removing solid waste or material that has been separated for recycling from a point near its generation or storage.

**Commercial solid waste:** all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding household and industrial solid waste.

**Community relations:** a program for informing and encouraging public participation in the remediation process and responding to community concerns. The term "public" includes citizens directly affected by the site, other interested citizens or parties, organized groups, elected officials, and potentially responsible parties.

**Compact:** *Compact of Free Association Between the United States of America and the Republic of the Marshall Islands*, which became effective on October 21, 1986, under Presidential Proclamation No. 5564 on November 3, 1986.

**Compatibility:** the property of a material or waste that permits its use with other materials or wastes without undesirable results being caused by the combination. Guidelines for determining compatibility of wastes and examples are in Appendix 3-6D.

**Comprehensive Performance Evaluation (CPE):** a thorough review and analysis of a water treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices.

**Conflict resolution:** a procedural mechanism for expediting resolution of disputes among appropriate agencies and USAKA about compliance with an environmental standard.

**Confluent growth:** a continuous bacterial growth covering the entire filtration area of a membrane filter, or a part of the area, in which bacterial colonies are not discrete.

**Conservation recommendation:** suggestion of the U.S. Fish and Wildlife Service (USFWS) for discretionary measures for minimizing or preventing adverse effects of a proposed action on species or habitats that are the subject of biological opinions.

**Construction:** fabrication, erection, or installation of an affected facility.

**Construction and Demolition Waste:** is largely inert solid waste resulting from demolition or razing of buildings, roads or other structures or construction activities that consist of concrete, rock, brick, bituminous concrete, wood, masonry, composition roofing, roofing paper, steel, plaster, soil, plant matter, and minor amounts of other metals, such as copper. Construction and demolition waste does not include any hazardous waste, cleanup materials contaminated with hazardous substances, friable asbestos, waste paints, solvents, sealers, adhesives, hazardous debris or similar substances.

**Consultation:** the process in which USAKA offers the appropriate agencies the opportunity to review and comment on activities proposed at USAKA that have the potential to affect public health and safety and the environment.



**Contaminant:** physical, chemical, biological, or radiological substance in water, soil, or air.

**Contractors:** nonfederal entities under contract to any federal agency and performing services for the United States at USAKA.

**Control, Control Device:** pollution-control equipment or devices designed to reduce, eliminate, treat, or chemically change pollutants or effluents regulated by the Standards.

**Conventional filtration treatment:** a series of processes, including coagulation, flocculation, sedimentation, and filtration, that results in substantial removal of particulates.

**Criteria air pollutant:** a pollutant for which a standard is stated in 3-1.6 or a standard is brought into effect under the provisions of Section 2-22.

**Criterion continuous concentration (CCC):** the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (4 days) without deleterious effects (also referred to as the chronic criteria).

**Criterion maximum concentration (CMC):** the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (1-hour average) without deleterious effects (also referred to as the acute criteria).

**Critical habitat:** an area that is proposed or designated as a critical habitat under the U.S. Endangered Species Act and that contains physical or biological features essential to the conservation of a species.

**Cultural resources:** Resources that are listed on or determined to be eligible for listing on the RMI National Register of Historic Places.

**Debris:** is solid material exceeding 60mm particle size that is intended for disposal and that is a manufactured object, plant matter, or natural geologic material. Debris does not include general solid waste, any hazardous waste, lead acid batteries, cadmium batteries, process residues (e.g., such as sewage sludge), asbestos containing materials, or any other waste specifically governed by these Standards.

**Demolition:** the wrecking or taking out of a load-supporting structural member of a facility and related handling operations.

**Designated agency:** the applicable U.S. resource agency, either USFWS or USNMFS, for preparing biological opinions and processing DEPs for endangered species and other wildlife resources (Section 3-4). USFWS is the designated agency for most affected species and critical habitats (i.e., species in Appendices 3-4A through 3-4C and 3-4E through 3-4G). The exception is for marine mammals, sea turtles, and the marine species listed in Appendix 3-4D. For cultural resources, the designated agency is RMIEPA.

**Diatomaceous earth filtration:** a process resulting in substantial particulate removal in which a filter media consisting of a precoat cake of diatomaceous earth is deposited on a support membrane (septum) and, while the water is filtered by passing through the cake on the septum, additional filter media (known as "body feed") are continuously added to the feed water to maintain the permeability of the filter cake.

**Direct filtration:** a series of processes, including coagulation and filtration but excluding sedimentation, resulting in substantial removal of particulates.

**Discarded:** abandoned, recycled, or considered inherently waste-like.

**Discharge:** includes, but is not limited to, spilling, leaking, pumping, pouring, emitting, emptying, or dumping oil but excludes discharges resulting from circumstances identified and reviewed and made part of the public record in a DEP and subject to a condition in such a DEP; or continuous or anticipated intermittent discharges from a point source, identified in a DEP, that are caused by events occurring within the scope of relevant operating or treatment systems. For the USAKA Standards, "discharge" also means threat of discharge.

**Discharge-monitoring report:** a report of status on the compliance by USAKA for wastewater discharges from point sources at USAKA.

**Discharge of dredged material:** addition of dredged material into RMI waters. The term includes, without limit, the addition of dredged material to a specified discharge site in RMI waters and the runoff or overflow from a contained land or water disposal site. Discharges of pollutants into RMI waters resulting from the onshore subsequent processing of dredged material that is extracted for a commercial use (other than fill) are not included in this term. The term does not include incidental soil movement occurring during normal dredging operations.

**Discharge of fill material:** addition of fill material into RMI waters. The term includes, without limit, the following activities: placement of fill that is necessary for constructing a structure; building a structure or impoundment requiring rock, sand, dirt, or other materials for its construction; developing sites for recreational, industrial, commercial, residential, and other uses; protecting or reclaiming property using devices such as riprap, groins, seawalls, breakwaters, revetments; beach nourishment; levees; fill

for structures such as sewage treatment facilities, intake and outfall pipes for power plants, and subaqueous utility lines; and artificial reefs.

***Disinfectant:*** any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms.

***Disinfection:*** a process that inactivates pathogenic organisms in water by using chemical oxidants or equivalent agents.

***Disinfection Profile:*** a summary of daily *Giardia lamblia* inactivation through the water treatment plant. The procedure for developing a disinfection profile is contained in UES Section 3-3.8.5.

***Disposal:*** final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soil; and drums containing hazardous materials from removal actions or accidental releases. Disposal may be performed through use of approved secure landfills, surface impoundments, land farming, deep-well injection, ocean dumping, or incineration.

***Document of Environmental Protection (DEP):*** a procedural mechanism that provides a structured forum for USAKA, U.S. Government agencies, and RMIEPA for reviewing and commenting on activities proposed by USAKA that have the potential to affect the USAKA environment.

***Dredged material:*** material that is excavated or dredged from waters of the RMI.

***Dredging and Filling (Maintenance):*** Routine dredging or deepening of an existing, already dredged, channel or area using mechanical means, or the routine maintenance and repairs to existing shore protection structures. This does not include blasting or quarrying activities.

***Emergency environmental condition:*** a condition that presents an immediate threat to public health, public safety, or sensitive natural resources as determined by the Commander, USAKA, or by an appropriate agency. An emergency environmental condition may cause an immediate threat of exposure of a hazardous substance to humans or the environment, and requires some immediate intervention to preclude or minimize the threat to public health or the environment prior to initiation of remedial action.

***Emergency renovation operation:*** a renovation operation that was not planned but results from a sudden, unexpected event. The term includes operations necessitated by nonroutine failures of equipment.

***Endangered:*** species of fish, wildlife, and plants that are imminently in danger of extinction or elimination from USAKA or are otherwise listed in Appendices 3-4A, 3-4B, or 3-4D of the Standards.

***Enhanced coagulation:*** the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

***Environment:*** the waters of the RMI, ocean waters, and all other surface water, groundwater, drinking water supply, land surface or subsurface strata, or ambient air within the RMI and humans and animals living in the RMI and their interrelationships. The sum of all external conditions affecting the life, development, and survival of an organism.

***Environmental Advisory Panel (EAP):*** a three-member panel selected by the RMI and U.S. Governments for hearing disputes between the two governments when conflicts have not been resolved at the first or second level of the conflict resolution process.

***Environmental Assessment (EA):*** an environmental analysis prepared under the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) in accordance with Army Regulation 200-2.

***Environmental categories:*** the environmental areas covered by the Standards, including air quality, water quality and reef protection, drinking water quality, endangered species and wildlife resources, ocean dumping, waste and material management, and cultural resources.

***Environmental Comments and Recommendations (ECR):*** a formal written response from the appropriate agencies to a Notice of Proposed Activity (NPA) from USAKA.

***Environmental Impact Statement (EIS):*** a statement prepared under the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) in accordance with Army Regulation 200-2, describing environmental resources potentially affected by a proposed action, analyzing how the resources could be affected and the significance of the effects, describing how potential negative effects will be mitigated, and describing alternatives to the proposed action.

***Environmental Opinion:*** a procedural mechanism whereby RMIEPA notifies USAKA of RMIEPA's position on USAKA's compliance with an environmental standard.

***Environmental restoration:*** the process of cleaning up, containing, or stabilizing the release of hazardous substances, contaminants, and pollutants into the environment.

**Exceedance:** violation of environmental protection standards by exceeding allowable limits or concentration levels.

**Facility:** buildings, structures, installations, equipment, pipes or pipelines (including pipes into a sewer or a publicly owned treatment works), wells, pits, ponds, lagoons, impoundments, ditches, landfills, storage containers, motor vehicles, rolling stock, aircraft, or sites or areas where a hazardous substance has been deposited, stored, disposed of, placed, or otherwise located; does not include consumer products in consumer use or vessels. Institutional, commercial, or industrial structures, installations, or buildings (excluding apartment buildings having no more than four dwelling units).

**Facility component:** pipes, ducts, boilers, tanks, reactors, turbines, or furnaces at or in a facility or any structural member of a facility.

**Feasibility action plan:** a plan developed by the lead agency as part of restoration to determine the nature and extent of the problem presented by the release. The remedial investigation (RI) emphasizes data collection and site characterization and generally is performed concurrently and interactively with the feasibility study. The RI includes sampling and monitoring, as necessary, and includes gathering sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives.

**Filter Profile:** a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

**Fill material:** any material that replaces parts of the territorial waters of the RMI with dry land or that changes the bottom elevation of a water body for any purpose.

**Filtration:** a treatment process for removing solid (particulate) matter from water by passing the water through porous media, such as sand or a man-made filter. The process often is used to remove particles that contain pathogenic organisms.

**First-draw tap sample:** a 1-liter sample of tap water that has been standing in plumbing pipes at least 6 hours and is collected in accordance with Section 3-3.5.1.2(b)(4)(iv) and without flushing the tap.

**Friable asbestos material:** a material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize, or reduce to powder when dry.

**GAC10:** granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days.

**Garbage:** putrescible solid waste resulting from the handling, preparation, cooking, or serving of food.

**General Solid Waste:** is solid waste that includes household waste and nonhazardous commercial solid waste. General solid waste does not include construction or demolition waste or debris.

**Generation:** the act or process of producing solid or hazardous waste.

**Graywater:** water generated from showers, sinks, laundry facilities, deck drains, scullery drains, and other ship "hotel" services.

**Gross alpha particle activity:** the total radioactivity due to emission of alpha particles as inferred from measurements made on a dry sample.

**Gross beta particle activity:** the total radioactivity due to emission of beta particles as inferred from measurements made on a dry sample.

**Groundwater:** for defining, considered the same as surface water because of the direct influence of surface water on groundwater at USAKA.

**Haloacetic acids (five) (HAA5):** the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition.

**Hazardous Debris:** is debris that contains a hazardous waste listed in Appendix 3-6B.

**Hazardous material:** the materials regulated by the U.S. Department of Transportation that require special handling and controls.

**Hazardous substance:** a compound listed in Appendix 3-6C.

**Hazardous waste:** the materials listed as hazardous or that exhibit the characteristics of a waste and are intended for disposal or are used in a way that constitutes disposal.

**Historic Preservation Officer (RMIHPO):** the Historic Preservation Officer of the Republic of the Marshall Islands.

**Historic Property:** means any prehistoric or historic district, site, building, structure, or object included in, or associated with, or eligible for inclusion in, the Republic of the Marshall Islands (RMI) National Register. Includes artifacts, records, and remains

**Household waste:** all solid waste, including garbage, trash, and sanitary wastes in septic tanks, derived from households (including single and multiple residences, transient housing, crew quarters, campgrounds, picnic grounds, and recreation areas).

**Initial dilution:** the dilution that the wastewater has achieved with the receiving water at the centerline of the mixing zone where the mixture surfaces or the density of the mixture becomes equal to the density of the surrounding receiving water.

**In liquid service:** equipment that is not in gas or vapor service.

**Interested person:** appropriate organizations and individuals, including customary and traditional landowners within the RMI, concerned about the effects of an undertaking on cultural resources.

**Land application:** the spraying, spreading, injection, or incorporation of sewage sludge or septage onto or below the land surface for the purpose of conditioning the soil or fertilizing crops or vegetation grown in the soil.

**Leaking PCBs or PCB leak:** all instances in which a PCB article, a PCB container, or PCB equipment has PCBs on any part of its external surface.

**Lethality to passing organisms:** lethality which results when an organism, passing through an acute mixing zone, receives a 1-hour average exposure that is greater than the “criterion maximum concentration” (CMC) for a specific toxic pollutant. See Section 3-2C.2.

**Legionella:** a genus of bacteria, some species of which have caused Legionnaires' disease, a type of pneumonia.

**Letter of commitment:** a procedural mechanism prepared by USAKA after parties to a dispute have resolved the problem, either formally or through the conflict resolution process. The letter of commitment obligates USAKA to resolving the problem through appropriate corrective actions and on a reasonable schedule.

**Major stationary source:** a stationary source that has the potential to emit pollutants in excess of the amounts specified in Table 3-1.5.2.

**Manner constituting disposal:** the use or placement of a waste in a way that precludes recovery.

**MARPOL 73/78:** International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, Annex I, which regulates pollution from oil and which entered into force in the United States on October 2, 1983.

***Material Safety Data Sheet (MSDS)***: document that presents information, required under U.S. Occupational Safety and Health Act standards, on a chemical's physical properties, health effects, and use precautions.

***Maximum contaminant level (MCL)***: the maximum permissible level of a contaminant in water that is delivered to the free-flowing outlet of the ultimate user of a public water system except in the case of turbidity, where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

***Maximum contaminant level goal (MCLG)***: the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur and that allows an adequate margin of safety. MCLGs are nonenforceable health-based goals.

***Maximum residual disinfectant level (MRDL)***: a level of disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects.

***Maximum residual disinfectant level goal (MRDLG)***: the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants.

***Mid-Atoll corridor***: the area within Kwajalein Atoll and Kwajalein Lagoon that is controlled by the United States, bounded on the north by a line drawn north of Boked Island on the east reef and Yabbernohr Island on the west reef and bounded on the south by a line drawn north of Bigej Island on the east reef and north of the high-tide mark on Ninni Island on the west reef. A map of the area is Appendix 3-8A.

***Mixing zone***: a defined area around a point source in which specific water quality criteria (reference Section 3-2.6.3(b)) may be exceeded. A zone of mixing is the volume of water near the point of discharge within which the waste immediately mixes with ocean water because of the momentum of the waste discharge and the difference in density between the waste and the receiving water. The mixing zone includes the area beyond the zone of initial dilution in which secondary mixing occurs in the ambient waterbody.

***Modification to stationary source***: physical changes or changes in the method of operation of an existing facility that (1) either singly or in combination with other changes, cause an increase by more than 5 percent in the emission level of a pollutant above the DEP emissions level for that source, or (2) result in the emission of an air pollutant (to which a standard applies) into the atmosphere that was not emitted



previously and would be emitted at a level that normally triggers a DEP, as defined in Section 3-1.5.2(a).

***National Register of Historic Places:*** the Republic of the Marshall Islands National Register of Historic Places, and the United States National Register of Historic Places, including the United States National Landmark properties.

***National Register criteria:*** the criteria established by the RMI and the U.S. National Historic Preservation Act for evaluating the eligibility of properties for the National Register.

***New source:*** a source of air pollution that was constructed or began operation after the effective date of these Standards.

***Nonpoint source:*** pollution sources that are diffuse and do not have a single point of origin or are not introduced into a receiving stream from a specific outlet. The pollutants generally are carried off the land by stormwater runoff. The commonly used categories for nonpoint sources are agriculture, forestry, urban, mining, construction, dams and channels, land disposal, and saltwater intrusion.

***Notice of continuing activity:*** a written notification of USAKA's intent to continue the activities specified in a DEP five years after the DEP was issued. A notice of continuing activity must be reissued every five years.

***Notice of deficiency:*** a written notice constituting the first level of oversight initiated by appropriate agencies in response to USAKA's noncompliance with the Standards. The notice of deficiency must include a discussion of specific points of noncompliance, and a copy must be furnished to the Commander, USAKA.

***Notice of proposed activity:*** a written notice from USAKA informing all appropriate agencies of USAKA's intent to initiate an activity that requires a DEP.

***Ocean disposal site:*** a precise geographical area within which ocean disposal of wastes is authorized under conditions specified in DEPs executed under Section 2-17.3. Such sites are identified by boundaries established by (1) coordinates of latitude and longitude for each corner, or (2) coordinates of latitude and longitude for the center point and a radius in nautical miles from that point. Boundary coordinates shall be identified as precisely as is warranted by the accuracy with which the site can be located with existing navigational aids or by implanting transponders, buoys, or other means of marking the site.

***Offshore facility:*** a facility of any kind located in, on, or under navigable water and a facility of any kind that is subject to, and is located in, on, or under any other waters, other than a vessel or a public vessel.

**Oil:** oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

**On-scene coordinator (OSC):** the government official designated by the Commander, USAKA, to manage and support emergency response and removal action activities under the Kwajalein Environmental Emergency Plan (KEEP) and undertaken pursuant to Section 3-6.4.1(b)(1)(viii). This individual shall represent USAKA.

**Onsite:** the areal extent of contamination and all suitable areas very close to the contamination.

**Open Burning:** means the combustion of any material without the following characteristics:

- (a) Control of combustion air to maintain adequate temperature for efficient combustion.
- (b) Containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion; and
- (c) Control of emission of the gaseous combustion products.

**Operation and maintenance (O&M):** measures required for maintaining the effectiveness of response actions.

**Outside air:** the air outside buildings and structures.

**Ozone-depleting chemicals:** the substances listed in Appendix 3-1B.

**Particulate asbestos material:** finely divided particles of asbestos material.

**PCB article:** any manufactured article, other than a PCB container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. Articles include capacitors, transformers, electric motors, pumps, pipes, and other manufactured items (1) that are formed to a specific shape or design during manufacture, (2) that have end-use functions dependent in part or in whole on the shape or design during end use, and (3) that have either no change of chemical composition during end use or only changes of composition having no commercial purpose separate from that of the PCB article.

**PCB Article Container:** any package, can, bottle, bag, barrel, drum, tank or other device used to contain PCB Articles or PCB Equipment and whose surface(s) has not been in direct contact with PCBs.

**PCB Container:** any package, can, bottle, bag, barrel, drum, tank or other device that contains PCBs or PCB Articles and whose surface(s) has been in direct contact with PCBs.

**PCB-Contaminated:** a non-liquid material containing PCBs at concentrations greater than or equal to 50 ppm but less than 500 ppm; a liquid material containing PCBs at concentrations greater than or equal to 50 ppm but less than 500 ppm or where insufficient liquid material is available for analysis; a non-porous surface having a surface concentration greater than 10 micrograms per 100 square centimeters ( $10 \mu\text{g}/100 \text{ cm}^2$ ) but less than  $100 \mu\text{g}/100 \text{ cm}^2$  measured by a standard wipe test.

**PCB-Contaminated Electrical Equipment:** any electrical equipment that contains PCBs at concentrations greater than or equal to 50 ppm and less than 500 ppm in the contaminating fluid. In the absence of liquids, electrical equipment is PCB-Contaminated if it has PCBs at concentrations  $> 10 \mu\text{g}/100 \text{ cm}^2$  and less than  $100 \mu\text{g}/100 \text{ cm}^2$  as measured by a standard wipe test.

**PCB Equipment:** any manufactured item, other than a PCB Container or a PCB Article Container, which contains a PCB Article. Includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures.

**PCB item:** any PCB article, PCB article container, PCB container, or PCB equipment that deliberately or unintentionally contains or has as a part of it any PCB or PCBs.

**PCB Waste:** PCBs and PCB Items that are subject to the disposal requirements of the Standards.

**PCB and PCBs (polychlorinated biphenyls):** any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any contamination of substances which contains such substance. For any purpose under the Standards, inadvertently generated non-Arochlor PCBs are defined as the total PCBs calculated following division of the quantity of monochlorinated biphenyls by 50 and dichlorinated biphenyls by 5.

**Person:** an individual, a corporation, a partnership, a trust, an association, or any other private entity or any public body or officer, employee, agent, department, or instrumentality of the U. S. government or of a foreign government.

**Personal protective equipment:** equipment designed to protect a worker from inhaling or coming into contact with toxic or hazardous materials, waste, or substances.

**Petroleum Product:** is oil of any kind or in any form, including, but not limited to petroleum, fuel oil, diesel oil, gasoline, sludge.

***Petroleum-product storage tanks:*** an installation or an activity that meets at least one of the following criteria:

- (a) Because of its location, the installation or activity has the potential to spill a petroleum product or a hazardous substance in such quantity that human health or welfare or the environment would be harmed.
- (b) Aggregate petroleum product stored aboveground on the installation is more than 1,320 gallons.
- (c) The capacity of any single above ground storage tank for petroleum products on the installation is more than 660 gallons.
- (d) The total amount of petroleum product stored underground on the installation is more than 660 gallons.

***Picocurie (pCi):*** the quantity of radioactive material producing 2.22 nuclear transformations per minute.

***Planned renovation operation:*** a renovation operation or a number of such operations in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual unscheduled operations are included if a number of such operations can be predicted for a given period of time on the basis of operating experience.

***Point source:*** a discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, vessel, or other floating craft, from which pollutants are or may be discharged.

***Pollutant:*** includes, but is not limited to, elements, substances, compounds, or mixtures, including disease-causing agents, that after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly by ingestion through food chains, will, or may reasonably be anticipated to, cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such organisms or their offspring. The term does not include natural gas, liquefied natural gas, or synthetic gas of pipeline quality or mixtures of natural gas and such synthetic gas. The term "pollutant" or "contaminant" also means a pollutant or contaminant that may present an imminent and substantial danger to public health or welfare.

***Pollutant discharge:*** discharge of either a point source or a nonpoint source of pollution into marine waters.

***Post-removal site control:*** the activities that are necessary for sustaining the integrity of a removal action after its conclusion. Post-removal site control may be a

removal action or a remedial action. The term includes, without being limited to, activities such as relighting gas flares, replacing filters, and collecting leachate.

**Potable water:** drinking water that is safe for human consumption and meets the standards for maximum contaminant levels in Section 3-3.

**Potential to emit:** the maximum emission rate of a pollutant that can occur at a source when operated at its maximum physical and operational design capacity.

**Practicable:** available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

**Preliminary assessment (PA):** a review of existing information and an offsite reconnaissance, if appropriate, for determining if a release may require additional investigation or action. A PA may include an onsite reconnaissance.

**Primary drinking water regulation:** any MCL requirement in Section 3-3 of the Standards.

**Procedural requirements:** the requirements that are related to the management or control mechanisms for environmental protection but that are not related to performance standards for interaction with the environment. Examples include DEPs, monitoring, record-keeping, reporting, training, compliance, conflict resolution, and notification.

**Public:** The human population at USAKA.

**Public participation:** see "community relations."

**Public water system (PWS):** a system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year.

**Quality assurance project plan (QAPP):** a written document for all remedial site-sampling activities that presents in specific terms the organization (where applicable), objectives, functional activities, and specific quality assurance (QA) and quality control (QC) activities designed to achieve the data-quality objectives of a specific project(s) or a continuing operation(s). The QAPP is prepared for each specific project or continuing operation or for a group of similar projects or continuing operations.

**Radioactive materials:** any material that has been contaminated by radionuclides of anthropogenic origin or by potential sources of naturally occurring radionuclides for commercial purposes or that has been enriched in natural or artificial radionuclides; does not include sewage sludge, dredge spoil, fly ash, agricultural wastes, construction

materials, vessels, artificial reef building materials, and other such material provided that they have not been contaminated with radioactive materials.

***Recoverable resource:*** a material that still has useful physical, chemical, or biological properties after serving its original purpose and that can therefore be reused or recycled for the same purpose or other purposes.

***Recovery:*** the process of obtaining materials or energy resources from solid waste.

***Recyclable material:*** see "recoverable resource."

***Recycled material:*** a material that is used in place of a primary, raw, or virgin material in manufacturing a product.

***Recycling:*** the process by which recovered materials are used for making new products.

***Regulated area,*** in relation to asbestos-removal activities: an area established to demarcate areas where airborne concentrations of asbestos exceed the permissible exposure limit (PEL). The regulated area may take the form of a temporary enclosure or an area demarcated in a way that minimizes the number of employees exposed to asbestos.

***Regulated medical waste (RMW):*** waste that is produced as the direct result of patient care at a health care facility and that has the potential to endanger individual or community health if improperly managed.

***Release:*** spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous substances, pollutants, or contaminants, but excluding:

- (a) a release that results in exposure of persons solely within a workplace, for which exposure such persons may assert a claim against their employer.
- (b) emissions from the engine exhaust of a motor vehicle, rolling stock, an aircraft, a vessel, or a pipeline-pumping station engine and from the normal application of fertilizer. For the USAKA Standards, "release" also means threat of release.

***Remedial Program Manager (RPM):*** the government official designated by the Commander, USAKA, to manage and support all remediation activities. This individual shall represent USAKA.

***Remedy or remedial action (RA):*** actions that are consistent with the permanent remedy that are taken instead of or in addition to the removal action in case of a release

or a threatened release of a hazardous substance into the environment to prevent or minimize the release of hazardous materials so that they do not migrate and cause substantial danger to present or future public health or welfare or to the environment. The term includes, but is not limited to, such actions at the location of the release as storage; confinement; perimeter protection using dikes, trenches or ditches, or clay covers; neutralization; cleanup of released hazardous materials and associated contaminated materials; recycling or reuse; diversion; destruction; segregation of reactive wastes; dredging or excavation; repair or replacement of leaking containers; collection of leachate and runoff; onsite treatment or incineration; provision of alternative water supplies; monitoring reasonably required to ensure that such actions protect the public health and welfare and the environment; and, where appropriate, post-removal site-control activities. The term includes the costs of permanently relocating residents, businesses, and community facilities where the determination is that, alone or in combination with other measures, such relocation is more cost-effective than, and environmentally preferable to, transportation or secure disposition of such hazardous materials off the site or may otherwise be necessary to protect the public health or welfare; the term includes offsite transport and offsite storage, treatment, destruction, and secure disposition of hazardous materials and associated contaminated materials. For the USAKA Standards, the term also includes related enforcement activities.

***Removal action:*** removal of oil or hazardous materials from the water and shorelines or such other actions as may be necessary to minimize or mitigate damage to the public health and safety and the environment. "Remove" or "removal" also means the cleanup or removal of released hazardous materials from the environment; such actions as may be necessary in case of the threat of release of hazardous materials into the environment; such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous materials; the disposal of removed material; or such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health and safety and the environment that may otherwise result from a release or threat of release. In addition, the term includes, without being limited to, security fencing and other measures for limiting access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, post-removal site control, where appropriate, and emergency assistance. For the USAKA Standards, the term also includes related enforcement activities.

***Renovation:*** altering in any way one or more facility components; operations in which load-supporting structural members are wrecked or taken out are excluded.

***Repair:*** adjustment or other alteration of equipment to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of dripping, or indication by a sensor that a seal or a barrier fluid system has failed.

***Reportable quantities:*** the quantities of substances or materials that must be reported to the appropriate agencies when they are released in an uncontrolled way into

the environment or without the authority of a DEP. Reportable quantities are listed in Appendix 3-6C.

***Respond or response:*** removal, remedy, or remedial action, including related enforcement activities.

***Response action:*** removal, remedy, or remedial action, including related enforcement activities.

***Responsible charge:*** the operator(s) in responsible charge is defined as the person(s) designated by the USAKA/KMR to be the certified operator(s) who makes decisions regarding the daily operational activities of a public water system, water treatment plant and/or distribution system, that will directly impact the quality and/or quantity of drinking water.

***Responsible official:*** a person, whether a government employee or a contractor, who is responsible or accountable for an activity that has the potential to affect the environment.

***Restricted-use pesticide product:*** a registered pesticide, some or all of the uses of which may be classified under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulations for restricted use if the pesticide requires special handling because of its toxicity. Restricted-use pesticides may be applied only by trained, certified applicators or by those under their direct supervision.

***Risk assessment planning document:*** the document containing the qualitative and quantitative evaluation performed in an effort to define the risk posed to human health or the environment by the presence or potential presence or the use of specific pollutants.

***RMI:*** The constitutional government of the Republic of the Marshall Islands.

***Rubbish:*** nonputrescible solid waste comprising two categories:

(a) ***Combustible rubbish:*** primarily organic material, including paper, plastic, cardboard, wood, rubber, and bedding.

(b) ***Noncombustible rubbish:*** primarily inorganic material, including glass, ceramics, and metal.

***Sanitary survey:*** an onsite review of the water source, facilities, equipment, and operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, and operation and maintenance for producing and distributing safe drinking water.



**Sealed radiation sources:** a by-product material that is encased in a capsule designed to prevent leakage or escape of the by-product material.

**Sedimentation:** letting solids settle out of wastewater by gravity during wastewater treatment.

**Semiannual:** occurring every 6 months or twice a year.

**Septage:** the liquid or solid material removed from a septic tank, cesspool, portable toilet, marine sanitation device, or similar treatment works that receives domestic sewage. Septage does not include liquid or solid material removed from treatment works, such as an oil/water separator or a dining facility grease trap, that process solely commercial or industrial wastewaters.

**Sewage Sludge:** the solid, semi-solid, or liquid residue generated during the treatment of primarily domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; or any material derived from sewage sludge, such as compost. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

**Slow sand filtration:** a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 meter per hour) resulting in substantial particulate removal by physical and biological mechanisms.

**Sludge:** the accumulated semiliquid suspension of settled solids (other than sewage sludge) deposited from wastewater or other fluids in tanks or basins; an aggregate of oil or of oil and other matter of any kind in any form other than dredged spoil having a combined specific gravity equivalent to or greater than water.

**Solid waste:** garbage, refuse, sludge, and other discarded materials resulting from industrial and commercial operations and from community activities.

**Specific ultraviolet absorption at 254 nanometers (nm) (SUVA):** an indicator of the humic content of the water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm ( $UV_{254}$ ) in  $m^{-1}$  by its concentration of dissolved organic carbon (DOC) in mg/l.

**Specification:** a clear and accurate description of the technical requirements for materials, products, or services, identifying the minimum requirements for quality and construction of materials and equipment necessary for an acceptable product. In general, specifications are in the form of written descriptions, drawings, prints, commercial designations, industry standards, and other descriptive references.

**Spills:** see "release."

**Start (or commencement) of construction:** the point at which USAKA or its contractor(s) has undertaken a continuous program of construction or modification or USAKA has entered into a contractual obligation to undertake and complete within a reasonable amount of time a continuous program of construction or modification.

**Stationary Source:** a building, a structure, a facility, or an installation that emits or may emit an air pollutant while stationary; the term does not apply to self-propelled vehicles.

**Strip:** to take off friable asbestos materials from any part of a facility.

**Structural member:** a load-supporting member of a facility, such as a beam and a load-supporting wall, or a nonload-supporting member, such as a ceiling and a nonload-supporting wall.

**Substantive requirements:** the requirements relating to the performance standards for interaction with the environment that protect the environment from harm. Examples include the standards for water quality and reef protection, air quality, drinking water, hazardous materials, and wildlife resources.

**Surface water:** all water that is open to the atmosphere and is subject to surface runoff.

**Take or taking:** to pursue, hunt, shoot, wound, kill, trap, capture, or collect a migratory bird species or to attempt to do so. For marine mammals, a taking means to harass, hunt, capture, collect, or kill a marine mammal, including the collection of dead animals, the restraint or detention of a marine mammal (no matter how temporary), or the negligent or intentional operation of an aircraft or vessel that results in disturbing or molesting a marine mammal.

**Territorial waters of the RMI:** the belt of sea measured from the seaward low-water line of the RMI reef and extending seaward a distance of 12 miles.

**Threat of discharge or release:** see "discharge" and "release."

**Threat of release:** see "release."

**Total organic carbon (TOC):** the sum of organically bound carbon present in water, bonded to dissolved or suspended matter.

**Total trihalomethanes (TTHM):** means the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane [chloroform],

dibromochloromethane, bromodichloromethane, and tribromomethane [bromoform]), rounded to two significant figures.

**Toxic substance:** the substances designated under Section 7 of the Toxic Substances Control Act.

**Toxic waste:** the wastes identified in Appendix 3-6B.2(C)(6) and listed in Table 3-6B.2(C)(6).

**Treatment:** a method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of a hazardous waste to neutralize the waste or to recover energy or material resources from the wastes, or to render such waste nonhazardous or less hazardous; safer to transport, store, or dispose of; amenable to recovery or to storage; or reduced in volume.

**Trihalomethane (THM):** one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

**Turbidity:** a cloudy condition in water due to suspended silt or organic matter.

**Undertaking:** a project, an activity, or a program that can result in changes in the character or use of cultural resources, if any such resources are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of USAKA or must be licensed, assisted, or funded by a U.S. federal agency. Undertakings include new and continuing projects, activities, and programs and any of their elements not previously considered.

**Unreasonable degradation:** significant adverse changes in ecosystem diversity, productivity and stability of the biological community within the area of discharge and surrounding biological communities; threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

**Upset:** a breakdown condition of a wastewater treatment process that results in exceeding limits on the quantity or quality of water effluent.

**USAKA:** United States Army Kwajalein Atoll, which is composed of the areas within the mid-atoll corridor and the 11 islands within the Kwajalein Atoll controlled totally or in part by the United States, which are Kwajalein, Roi-Namur, Ennugarret, Ennylabegan, Meck, Eniwetak, Omelek, Gellinam, Gagan, Illeginni, and Legan.

**Vector attraction:** the characteristic of *any material* that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious *or pathogenic* agents.

***Vessel:*** every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than an RMI vessel.

***Virus:*** a virus of fecal origin that is infectious to humans through waterborne transmission.

***Visible emissions:*** emissions containing particulate asbestos material that are visually detectable without the aid of instruments; does not include condensed uncombined water vapor.

***Volatile organic compound:*** any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, that participates in atmospheric photochemical reactions. The following compounds are considered exempt from regulation as VOCs because of their negligible photochemical reactivity: methane; ethane; methylene chloride (dichloromethane); 1,1,1-trichloroethane (methyl chloroform); 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113); trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (HCFC-22); trifluoromethane (HFC-23); 1,2-dichloro 1,1,2,2-tetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); 1,1,1-trifluoro 2,2-dichloroethane (HCFC-123); 1,1,1,2-tetrafluoroethane (HFC-134a); 1,1-dichloro 1-fluoroethane (HCFC-141b); 1-chloro 1,1-difluoroethane (HCFC-142b); 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124); pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC-152a); parachlorobenzotrifluoride (PCBTf); cyclic, branched, or linear completely methylated siloxanes; acetone and perfluorocarbon compounds that fall into these classes (1) cyclic, branched, or linear completely fluorinated alkanes; (2) cyclic, branched, or linear completely fluorinated ethers with no unsaturations; (3) cyclic, branched, or linear completely fluorinated tertiary amines with no unsaturations; and (4) sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

***Waste Petroleum Products:*** is any petroleum product that is intended for disposal or recycling by means of heat recovery.

***Water quality standards:*** a designated use or uses for the waters of USAKA and water quality criteria for such waters that are based on such uses. Water quality standards are for protecting the public health or welfare, enhancing the quality of water, and serving the purposes of the USAKA Standards.

***Waters of the RMI:*** all surface waters of the RMI, including the ocean, the territorial waters, and all wetlands adjacent to those surface waters, excluding waste treatment systems and parts of waste treatment systems.

***Zone of initial dilution:*** the region of initial mixing surrounding or adjacent to the end of an outfall pipe or diffuser ports. The initial dilution is achieved due to the combined effects of the momentum and the buoyancy of the fluid discharged from an orifice.

***Zone of mixing:*** see "mixing zone."

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## ABBREVIATIONS AND ACRONYMS

ABC	Association of Boards of Certification
ACHP	Advisory Council on Historic Preservation
ACM	asbestos containing material
AHPA	Archaeological and Historic Preservation Act
ASTM Method	American Society for Testing and Materials Method
BAT	best available technology
BOD <sub>5</sub>	five-day biochemical oxygen demand
BPT	best practicable control technology currently available
CAA	Clean Air Act
CAS	Chemical Abstract System
CBOD <sub>5</sub>	five-day carbonaceous biochemical oxygen demand
CCC	Criterion Continuous Concentration
CDC	Centers for Disease Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERI	Center for Environmental Research Information
CFR	U.S. Code of Federal Regulations
CHPPM	Army Center for Health Promotion and Preventive Medicine
CITES	Convention on International Trade in Endangered Species
CMC	Criterion Maximum Concentration
Compact	Compact of Free Association Between the United States of America and the Republic of the Marshall Islands



[ABBRE]

CPE	Comprehensive Performance Evaluation
CWA	Clean Water Act
deg	degree
DEP	Document of Environmental Protection
DA	Department of the Army
DRMO	Defense Reutilization and Marketing Office
EAP	Environmental Advisory Panel
E. coli	<i>Escherichia coli</i>
ECR	Environmental Comments and Recommendations
EIS	environmental impact statement
EMSL	environmental monitoring systems laboratory
ESA	Endangered Species Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FWCA	Fish and Wildlife Coordination Act
GAC	Granular Activated Carbon
GC	gas chromatography
$\text{g/m}^2$	grams per square meter
HAA5	haloacetic acids (five)
HEPA	high-efficiency particulate air
HMMP	hazardous material management plan
HMTA	Hazardous Materials Transportation Act
HMWPP	hazardous materials, wastes, and petroleum products
HPA	Historic Preservation Act

HPC	heterotrophic plate count
HPO	historic preservation officer
HQ	headquarters
IAG	Interagency Group for Freely Associated State Affairs
IL&E	installation, logistics, and environmental
kcal	kilocalorie
KEEP	Kwajalein Environmental Emergency Plan
kg/day	kilograms per day
LC	lethal concentration
LLD	lowest level of detection
LOC	Letter of Commitment
MBCA	Migratory Bird Conservation Act
MCL	maximum contaminant level
MCLG	maximum contaminant-level goal
MDCL	maximum desirable contaminant level
MDL	method detection limit
µg/l	micrograms per liter
mg/l	milligrams per liter
mg/sqm	milligrams per square meter
MIRC	Marshall Islands Revised Code
ml	milliliters
MMPA	Marine Mammal Protection Act

**[ABBRE]**

MPRSA	Marine Protection, Research, and Sanctuaries Act
MRDL	Maximum residual disinfectant level
MRDLG	Maximum residual disinfectant level goal
mrem/y	millirems per year
MS	mass spectrometer
MSDS	Material Safety Data Sheet
NACE	National Association of Corrosion Engineers
NASA	National Aeronautics and Space Administration
NCA	Notice of Continuing Activity
NCP	National Contingency Plan
NEPA	National Environmental Policy Act of 1969
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NOD	Notice of Deficiency
NPA	Notice of Proposed Activity
NPDES	National Pollutant Discharge Elimination System
NSPS	new-source performance standard
NTU	nephelometric turbidity units
OASA	Office of the Secretary of the Army
ODA	Ocean Dumping Act
OFASA	Office of Freely Associated State Affairs
OSC	on-scene coordinator

OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
P-A	presence-absence
PA	preliminary assessment
PCB	polychlorinated biphenyl
pCi	picocuries
pCi/l	picocuries per liter
PEL	permissible exposure limit
pH	acid/base value
PM <sub>10</sub>	particulate matter (nominally 10 microns or less)
ppm	parts per million
PSES	pretreatment standards for existing sources
PSNS	pretreatment standards for new sources
PWS	Public Water System
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RMI	Republic of the Marshall Islands
RMIACHP	Republic of the Marshall Islands Advisory Council on Historic Preservation
RMIEPA	Republic of the Marshall Islands Environmental Protection Authority
RMIHPO	Republic of the Marshall Islands Historic Preservation Officer
RMW	regulated medical waste

**[ABBRE]**

ROD	record of decision
RPM	Remedial Program Manager
SCBA	self-contained breathing apparatus
SDI	Strategic Defense Initiative
SDWA	Safe Drinking Water Act
SEIS	Supplemental EIS
SI	site inspection
SPCC	spill prevention, control, and countermeasure plan
sq ft	square feet
sq m	square meter
SQuiRTs	Screening Quick Reference Tables
SS	suspended solids
SWDA	Solid Waste Disposal Act
TDS	total dissolved solids
TOC	total organic carbon
tpy	tons per year
TSCA	Toxic Substances Control Act
TSD	treatment, storage, or disposal
THM	trihalomethane
TTHM	total trihalomethanes
TTO	total toxic organics
TTPI	Trust Territory of the Pacific Islands
TU	turbidity unit

USAEDPO	U.S. Army Engineer Division, Pacific Ocean
USAEHA	U.S. Army Environmental Hygiene Agency
USAKA	U.S. Army Kwajalein Atoll
USASMDC	U.S. Army Space and Missile Defense Command
USASSDC	U.S. Army Space and Strategic Defense Command
USBMDO	U.S. Ballistic Missile Defense Organization
USDA	U.S. Department of Agriculture
USDOD	U.S. Department of Defense
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USNMFS	U.S. National Marine Fisheries Service
USPS	U.S. Postal Service
VHAP	volatile hazardous air pollutant
VOC	volatile organic compound

**[ABBRE]**

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